MONT71 Series
Elevator Integrated Controller

MONT71 Series
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User Manual

V1.0
User manual

FOREWORD

Thank you for purchasing MONT71 series elevator integrated controller (MONT71)!

This User Manual describes how to use MONT71 and their installation wiring, parameter setting, troubleshooting and daily maintenance etc. Before using the product, please read through this User Manual carefully. In addition, please do not use this product until you have fully understood safety precautions.

Note:

- Preserve this Manual for future.
- Due to product upgrade or specification change, and for the purpose of improving convenience and accuracy of this manual, this manual's contents may be modified.
- If you need the User Manual due to damage, loss or other reasons, please contact the regional distributor of our company or directly contact our company Technical Service Center.
- For the first time using, the user should carefully read this manual.
- If you still have some problems during use, please contact our company Technical Service Center.
- The product warranty is on the last page of this Manual, please preserve it for future.

MONT71 Technical Features

MONT71 series products can meet needs of all villa and freight elevators, adapting complete parallel modes for signal transmission, which are the Intelligent Control System with Automatic control technology, Power electronic technology, Motor drive technology and Network communication technology.

More advanced

- ➔ **Direct stop:** Based on the distance control, the direct stop technology realizes smooth speed and high operating efficiency.
- ➔ **Parameter auto-tuning free off load:** The synchronous motor and the asynchronous motor can do parameter auto-tuning free off load.
- ➔ **Start torque auto-compensation for no weighing device:** No need for the weighing device, you can achieve elevator start without impact, which adapt to a variety of encoders and motors.

Easier to use

- ➔ Pre-torque auto-compensation: It makes debug more convenient and more consistent.
- ➔ The onboard small panel design makes easier to repair and maintain the elevator.
- ➔ Synchronous and asynchronous is integration with good commonality.
- ➔ The external LCD panel can support to display in English or Chinese.

Safer

- ➔ Multi-security is assured which conforms to GB7588-2003 standard.
- ➔ The fault-tolerant design of hardware and software and many types of fault treatments protect the safe operation of the elevator.
- ➔ Strong environmental adaptability.
- ➔ Immediately locking the base electrode and switching off IGBT output at fault can avoid contactor arcing.

More economical

- ➔ Three programmable high voltage 110－220VAC input interfaces can save the user's system cost.
- ➔ The system can be equipped with a minimum of three contactors (safety, brake, output).
- ➔ Full range of MONT71 is built-in the braking unit, which can be configured the power regenerative unit to achieve four-quadrant operation and energy saving.
- ➔ The system does not need the up or down limit switch.

More abundant

- ➔ There are 24 button I/O interfaces, which can meet the needs of 8 floors full selective even without expansion.
- ➔ There are 24 digital inputs and 24 relay outputs.
- ➔ There are 3 high-voltage inputs.
- ➔ You can choose the serial hall call communication.

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Chapter 1

MONT71

Configuration

1.1 Hardware Configuration

No.	Product	Model	Application	Number	Position	Remark
1	MONT71 elevator integrated controller	MT71-XT-XXX Details refer to section 3.1 Model Explanation	Elevator control integrated machine	Each elevator configures one	Elevator control cabinet	Must be equipped Select the model in accordance with motor power
2	Main control board	MT71-MCB-A	Elevator main board	Each elevator configures one	MONT71 or control cabinet	Must be equipped MONT71 has included
3	Panel	MT70-LCD-A	For elevator adjustment		RJ45 terminal of MCB	Optional MT70-LCD-B can store 10 group parameters
		MT70-LCD-B				
4	Display control board (internal call board)	MT71-HCB-A MT70-HCB-H MT70-HCB-F MT70-HCB-I MT70-HCB-D	For inside car display	Each elevator configures one	Manipulator	Optional The customs can design on their own MT71-HCB-A is parallel, and others are serial
5	Display control board (hall call board)		For hall call landing and floor display	Each floor configures one	Outside calling box	
6	Advanced open block	MT70-AOB-A	For advanced door and OD re-leveling	Each configures one	Elevator control cabinet	Optional
7	Door machine controller	MONT10	For door machine control	Each door motor configures one	Car top	Optional
8	Power regenerative unit	HDRU	Regenerate the energy back to the power grid	Each elevator configures one	Elevator control cabinet	Optional
9	Encoder interface card	MT70-PG1-ABZ	For asynchronous motor	Each elevator configures one	MONT71 series elevator integrated controller	Optional Select according to the encoder type
		MT70-PG2-SINCOS MT70-PG3-UVW	For synchronous motor			
10	IE module	MT70-IE	For internet of elevators	Each elevator configures one	Elevator control cabinet	Optional

1.2 Function Table

Standard function					
No.	**Function name**	**No.**	**Function name**	**No.**	**Function name**
1	Auto run	2	Driver run	3	Inspection run
4	Self-rescue back to leveling run	5	Firefighting back to base station run	6	Fireman run
7	Isolated run	8	Advanced OD run	9	OD re-leveling run
10	Testing run	11	Inspection OD/CD operation	12	Panel OD/CD operation
13	Auto back to base station run	14	Locked-elevator function	15	Anti-nuisance function
16	Full selective	17	Up selective	18	Down selective
19	Shaft self-learning function	20	Full-load by pass	21	Over-load protection
22	Lighting and fan energy-saving function	23	Reverse cancelling	24	Floor service set for front and back door
25	Door machine multi-modes operation	26	Open-through door control modes	27	Open the door outside this hall
28	OD button open the door	29	Auto open door at power-on	30	Repetition of door closing
31	Forced close door	32	CD button advanced close door	33	Category setting for the time keeping door open
34	Keep open function	35	Miss delete car command	36	Floor display by any setting
37	Various hall data display formats	38	Floor service setting	39	Car arrival chime
40	Double hall call on the same floor	41	Hall call adhesion recognition	42	Weighing signal compensation
43	Car location automatically correct	44	User calibration menu	45	Earthquake control function
46	Current aslant remove	47	Pull door function		

Protection function					
No.	**Function name**	**No.**	**Function name**	**No.**	**Function name**
1	Fault history	2	Over-speed protection	3	Protection of excessive speed deviation
4	Encoder reverse protection	5	Encoder disconnection protection	6	Door light curtain protection
7	Non-open outside door zone	8	Door fault protection	9	Protection of door-lock disconnect when running
10	Door lock jump detected function	11	Next landing	12	Leveling switch fault protection
13	Limit switch protection	14	Anti-slip protection	15	Protection for contactor of contact
16	Motor over-load protection	17	Over-current protection	18	Over-voltage protection
19	CPU overheated protection	20	Shaft self-learning fault protection		

1.3 Standard Function Description

No.	Function name	Function description	Remark
1	Auto run	1. Arrive to station and automatically open the door. 2. Automatically delay closing the door. 3. Manually close the door early. 4. Hall call forward automatic interception. 5. Hall call reverse highest (or lowest) automatic interception.	Normal/inspection switch turns to normal position; Inside the car, the auto/driver switch turns to auto position;
2	Driver run	At the driver running mode, the elevator does not have auto close door function controlled by the elevator driver, and the driver can choose the direction and straight running function.	
3	Inspection run	After press the inspection switch, the elevator will access to the inspection state, and the system will cancel auto run and operation of automatic doors. Pressing the up/down buttons will enable the elevator run to up/down at inspection speed. Release the button to stop the elevator immediately or decelerate to zero.	

No.	Function name	Function description	Remark
4	Self-rescue back to leveling run	Running conditions are met, if the elevator stopped at the non-leveling area, elevator will run at 0.200m/s to the nearby leveling area. 1. When detect any one of the up or down leveling signal: The elevator will decelerate from the inspection speed to the re-leveling speed. 2. When detect both of up and down leveling signals: After the delay time passing the leveling park, decelerate from inspection speed to zero speed, stop and then open the door.	
5	Firefighting back to base station run	After fire switch action, the system enters firefighting run mode: 1. The system will clear all of the hall call and internal call. 2. Automatically return to firefighting base station. 3. Normally open door. 4. After return to fire base station, output the fire linkage signal. • If the elevator is reversely running, stop on the near floor without open door, and direct run to fire base station, normally open.	
6	Fireman run	At the fireman run mode, the door does not automatically open or close. Only press the button can make the door action. • The elevator only response to one command in car once. • Only when the elevator open the door stopped at the base station, reset the fire switch and fireman switch, the elevator can run normally.	
7	Isolated run	At isolated running mode, the elevator does not response to hall call and close the door automatically.	Set F26.07 = 1
8	Advanced OD run	At the auto run mode, the speed during stopping process is less than the advanced open speed and the door signals are effective, system opens the door ahead of time through shorted lock- door signal door-close contactor to reduce the passenger waiting time.	Configure MT70-AOB-A Set F26.05 = 1
9	OD re-leveling run	The elevator stopping at the floor station, due to a large number of persons or goods entering and leaving, the leveling fluctuated because of the elastic deformation of elevator wire rope and the rubber, make inconvenience to people and goods entering or leaving. System allows run automatically at the speed of re-leveling to leveling station in the OD state.	Configure MT70-AOB-A Set F26.04 = 1
10	Testing run	Testing run is including the new elevator fatigue test, the shielding of hall call, OD/CD and over-load etc signals, the setting of any running times, and the allowable elevator random run etc.	

No.	Function name	Function description	Remark
11	Inspection OD/CD operation	After elevator entering the inspection state, if door-lock circuit disconnects, via pressing the up/down button the system will send out CD command. If door-lock circuit connects, the elevator will up/down run; If the elevator stopped at the position of the door zone, while pressing the up/down buttons, the system open command is given, and do the opening operation.	
12	Panel OD/CD operation	Panel's **RUN** key to perform OD operation; **STOP** key to perform CD operation.	
13	Auto back to base station run	When beyond the setting time and there is no internal call and hall call, elevators automatically return to the base station and wait for passengers.	

14	Locked-elevator function	At the auto run mode, after the elevator locked, the system eliminates all hall calls.
		• If there is internal call registration, after registered, the elevator will automatically return to locked-elevator base station then open the door.
		• If there is not internal call registration, the elevator will directly return to locked-elevator base station. After that:
		  • Stop displaying after 10s, then elevator automatically closes the door, turn off the car lighting, and the internal and hall call displays extinguish.
		  • Pressing the OD button can open the door, 10s later, restart to close the door and turn off the car lighting.	

15	Anti-nuisance function	1. According to the weighing signal: System identifies the number of passengers in car in accordance with the analogue weighing signal,and automatically determines the number of passengers inside and compares with the instructions registered in car. If an excessive number of calls registered, then the system considers it is anti-nuisance state and cancels all calls in car. 2. According to the light curtain signal: If the elevator is landing for consecutive three times and the light curtain is no action, the system will consider to be in anti-nuisance state, and clear all registered internal call command.	
16	Full selective	At auto run mode, elevator automatically response the up and down call button signal outside the hall.	
17	Up selective	At auto run mode, elevator automatically response the up call button signal outside the hall.	
18	Down selective	At auto run mode, elevator automatically response the down call button signal outside the hall.	

No.	Function name	Function description	Remark
19	Shaft self-learning function	At the inspection mode, after start the shaft self-learning, the elevator runs from the lower limit toward the upper limit, to test door zone position of each floor and data of shaft switch position, and save.	
20	Full-load by pass	At auto run mode, when the car is full loaded (generally is 80% rated load), the elevator only responds to internal calls but not the hall calls.	
21	Over-load protection	When the load inside the car is over the rated load; the buzzer inside the car alarms, the over-load indicator is lighting, and the elevator keeps opening the door on the floor.	
22	Lighting and fan energy-saving function	When beyond the setting time and there is no internal call and hall call, the elevator will automatically turn off the light and fan in car.	
23	Reverse cancelling	When elevator runs to the end floor or the direction is changed, system cancels all registered calls of the reverse directions.	
24	Floor service set for front and back door	Based on the need to set the service floors for the front door and the back door.	
25	Door machine multi-mode operation	Parameter setting can be the door machine number, as well as the door machine service floor, door switch holding torque.	
26	Open-through door control mode	Support 4 open-through door control modes.	
27	Open the door outside this hall	If the car stop at one floor, press the call button of this floor, the door will automatically open.	
28	OD button open the door	The elevator stopping at the door zone, you can re-press the OD button in the car to make elevator to re-open the closed or no-closed door.	
29	Auto open door at power-on	Under normal circumstances, each time the elevator system is powered up, if the car is in the door zone, the car door will open automatically.	
30	Repetition of door closing	After the elevator continuing close the door for a certain time, if the door-lock has not been closed, the elevator opens the door automatically, and then repeats to close the door.	Set F22.05≠0
31	Forced close door	In automatic state, the time of closing door lasts 60 seconds due to some reason, output the forced CD signal, the light curtain is invalid, and the buzzer sounds at the same time.	Set F26.13 = 1
32	CD button advanced close door	At auto run mode, pressing the CD button can cancel the door keep opening function, and after OD arrival, close the door immediately.	

No.	Function name	Function description	Remark
33	Category setting for the time keeping door open	System can identify different time to keep the door open: internal call to open the door, hall call to open the door, base station to open the door, delay to open the door.	
34	Keep open function	By pressing the keeping door open button, the elevator delay closing.	
35	Miss delete car command	In the car passengers can press the command button twice to eliminate the last error registered instruction.	
36	Floor display by any setting	Flexibly set the character displayed on each floor to meet the different display needs.	
37	Various hall data display formats	Outside the hall can set the scroll or fixed display, and the size of arrow.	Only the serial communication of hall call board works
38	Floor service setting	According to the needs can flexibly set the service floor of the elevator: close or activate one or more service floors and park landing.	
39	Car arrival chime	After the elevator arrives to the destination floor, the main control board will send the arrival chime signal.	
40	Double hall call on the same floor	Double hall calls can be set when opposite doors are on the same floor.	
41	Hall call adhesion recognition	System can identify the adhesion situation of the hall call up/down buttons, automatically remove the call of the adhesion to avoid that the elevator can not be closed to run caused by the outside-call button adhesion.	
42	Weighing signal compensation	The system can use weighing signal to compensate the start of the elevator.	
43	Car location automatically correct	1. When the elevator runs to the end station: The system will automatically check and rectify the car location information in accordance with the forced deceleration switch. If the position deviation is too large or the speed is greater than the forced deceleration rate, it will decelerate at forced deceleration to avoid hoisting top and squatting bottom. 2. When the elevator runs to the leveling floor: Automatically correct in accordance with the present position and floor data of shaft parameter self-learning. If the deviation is too large, will decelerate to stop. At the same time, when return to the nearest leveling area, will open the door, the buzzer inside the car will alarm, after closing, elevator returns to the base station correction position at 0.200m/s.	

No.	Function name	Function description	Remark
44	User calibration menu	Users can find the system parameters which are different from the factory parameters by this function.	
45	Earthquake control function	If the earthquake happens, earthquake detection devices act. The device has a contact signal input to the MONT71 system, the system will control the elevator stop at the nearest floor, after open the door, then stop running.	
46	Current aslant remove	When use synchronous motor, after the elevator decelerate and stop, the maintaining current of the motor is removed by the slope way to avoid abnormal noise of the motor during the process.	
47	Pull door function	The system supports the pull door function.	

1.4 Protection Function Description

No.	Function name	Function description
1	Fault history	The system can record 11 fault histories, including fault type, fault floor, fault time etc.
2	Over-speed protection	Ensure the car running speed in the security control areas, in order to ensure the safety of passengers and cargo.
3	Protection of excessive speed deviation	When detect that the speed deviation is too large, the system will protect itself automatically.
4	Encoder reverse protection	The system can judge the feedback signal direction of the rotary encoder, if is inconsistent with the given direction, it will carry out protection.
5	Encoder disconnection protection	The system can judge the feedback pulse of the rotary encoder, if encoder feedback signal is lost, it will carry out protection.
6	Door light curtain touching board protection	During the door is closing, the light curtain protection acts or the safe touching board act, the elevator will turn to open the door immediately. • Does not work in the fireman run or forced close door.
7	Non-open outside door zone	Prohibit from opening the door automatically when car is not in door zone.
8	Door fault protection	When detecting the elevator not yet close the door effective after the elevator open and close the door beyond the number set, system stop close and open the door switch and output the fault.
9	Protection of door-lock disconnect when running	When the door-lock disconnects during the elevator running, the system will be automatic protection.
10	Door lock jump detected function	Detect that the door machine OD arrival signal and the door lock signal are valid at the same time, will carry out the door-lock short protection

No.	Function name	Function description
11	Next landing	If the elevator continues to open the door more than the time of open the door, the OD arrival signal has not yet been detected, the elevator would be turned into the closing door state, and after the door closed, automatically run the next registered floor. At the same time, elevator alarms the changed floor park fault.
12	Leveling switch fault protection	When the elevator is in the automatic running mode, it will identify the leveling signal loss and adhesion status.
13	Limit switch protection	If the up/down limit switch is action, the elevator bans running up/down, but can run to the opposite direction.
14	Anti-slip protection	At the non-inspection mode during the elevator running process, if the elevator continuous running time beyond the F23.02 set time (maximum 45s) and the leveling switch does not act yet, the system will regard this as detect the rope slip fault and stop all car running.
15	Protection for contactor of contact	Brake contactor, output contactor, star-delta contactor and locked-door contactor etc feedback contact signals can be connected to the main control board (MCB), the system will automatically judge whether the contactor is normal in accordance with the operating logic. • If find the abnormal contactor, then carry out protection.
16	Motor over-load protection	When detect the motor over-load, the system will be automatic protection.
17	Over-current protection	When detect that the motor's current value is greater than the maximum allowable, the system will be automatic protection.
18	Over-voltage protection	When detect that the voltage is greater than the maximum allowable value, the system will be automatic protection.
19	CPU overheated protection	When detect that the drive module is overheated, the system will be automatic protection.
20	Shaft self-learning fault protection	When the shaft self-learning has not been completed correctly, the system will alarm the shaft self-learning fault. • Without the right shaft data, the elevator will not be able to run.

Chapter 2

Safety Information and Precautions

2.1 Safety Definition

Danger

Danger: A Danger contains information which is critical for avoiding safety hazard.

Warning

Warning: A Warning contains information which is essential for avoiding a risk of damage to product or other equipments.

Note

Note: A Note contains information which helps to ensure correct operation of the product.

2.2 About Motor and Load

Motor's overload protecting threshold

When choose the adaptive motor, the controller can effectively implement the motor thermal protection. Otherwise it must adjust the motor protection parameters or other protection measures to ensure that the motor is at a safe and reliable operation.

Lubrication of mechanical devices

At long time low-speed operation, it should provide periodical lubrication maintenance for the mechanical devices such as gear box and geared motor etc. to make sure the drive results meet the site need.

Check the insulation of the motor

For the first time using of the motor or after long time storage, it need check the insulation of the motor to avoid damage the controller because of the worse insulation motor.

Note:

Please use a 500V Mega-Ohm-Meter to test and its insulation resistance must be higher than 5Mohm.

2.3 About Safety

No capacitor or varistor on the output side

Since MONT71 output is PWM wave, it is strictly forbidden to connect capacitor for improving the power factor or varistor for lightning protection to the output terminals so as to avoid MONT71 fault tripping or component damage.

Contactors and circuit breakers connected to the output

If contactor or circuit breaker needs to be connected between MONT71 and motor, be sure to operate these contactors or circuit breakers when MONT71 has no output, so as to avoid any damage to MONT71.

Rated voltage

MONT71 is prohibited to be used beyond the specified range of operation voltage. If needed, please use the suitable voltage regulation device to change the voltage.

Change three-phase input into single-phase input

For three-phase input controller, the users should not change it to be single-phase input.

If you have to use single-phase power supply, you should set F17.00 (The detect base of lack of input) as 0%. And the bus-voltage and current ripple will increase, which not only influences the life of electrolytic capacitor but also deteriorates the performance of MONT71.

In that case, the controller must be derating and should be within the controller 60% rated value.

Lightning surge protection

MONT71 internal design has lightning surge overcurrent protection circuit, and has certain self-protection capacity against the lightning.

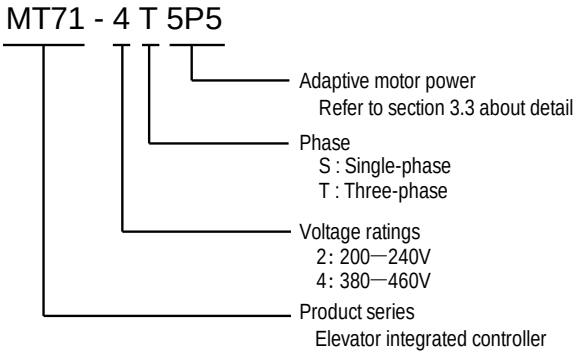
Altitude and derating

In the altitude exceeded 1000 meters area, since the heatsink efficiency will be reduced because of the tenuous air, MONT71 should be derated.

Chapter 3

Product Information

3.1 Model Explanation

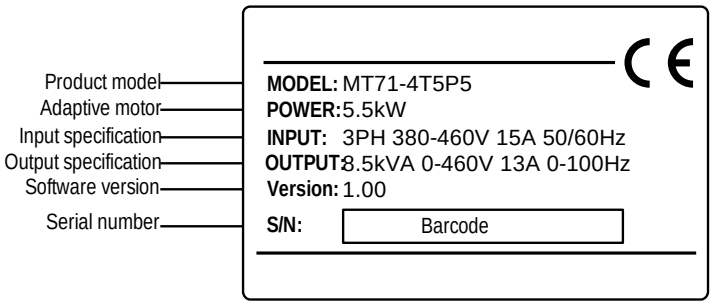


According to motor and encoder type, select the correct encoder interface card.

Motor type	Asynchronous motor	Synchronous motor	
Encoder type	Push-pull, open-circuit, differential	SIN/COS type	UVW type
Encoder interface card	ABZ encoder interface card （MT70-PG1-ABZ）	SINCOS encoder interface card（MT70-PG2-SINCOS）	UVW encoder interface card （MT70-PG3-UVW）

3.2 Nameplate

The nameplate is located on MONT71 right side.



3.3 Ratings

Model	Rated capacity (kVA)	Rated input current (A)	Rated output current (A)	Motor (kW)
Single-phase power supply: 200—240V, 50/60Hz				
MT71-2S2P2	3.8	24.1	10.3	2.2
MT71-2S3P7	5.9	40	17	3.7
Three-phase power supply: 200—240V, 50/60Hz				
MT71-2T3P7	5.9	19	17	3.7
MT71-2T5P5	8.5	29	27	5.5
MT71-2T7P5	11	35	33	7.5
MT71-2T011	16	47	45	11
MT71-2T015	21	62	55	15
MT71-2T018	24	77	70	18.5
MT71-2T022	30	92	80	22
MT71-2T030	39	113	110	30
Three-phase power supply: 380—460V, 50/60Hz				
MT71-4T2P2	3.4	7.3	5.1	2.2
MT71-4T3P7	5.9	11.9	9	3.7
MT71-4T5P5	8.5	15	13	5.5
MT71-4T7P5	11	20	18	7.5
MT71-4T011	16	29	27	11
MT71-4T015	21	35	33	15
MT71-4T018	24	41	39	18.5
MT71-4T022	30	50	48	22
MT71-4T030	39	62	60	30
MT71-4T037	49	77	75	37
MT71-4T045	59	93	91	45

3.4 Specifications

Item		Specification
Electrical	Rated voltage and frequency	Single/three-phase: 200－240V, 50/60Hz Three-phase: 380－460V, 50/60Hz
	Accuracy	Voltage: fluctuation within ± 10%, imbalance rate < 3% Frequency: ± 5%
	Output voltage	0－Input voltage
	Output frequency	0－100.00Hz
Performance	Maximum current	150% rated output current for 2 minutes; 180% rated output current for 10 seconds
	Control mode	Closed-loop vector control (VC)
	Operation command control mode	Panel control; terminal distance control
	Speed control accuracy	± 0.05%
	Speed control range	1：1000
	Torque control response	< 50ms
	Start torque	200% rated torque /0Hz
	Carrier frequency	1－16k, Carrier frequency can be adjusted automatically in accordance with the load characteristic
Characteristic	Maximum floor	10 floors
	Maximum run speed	1.5 m/s
	Communication mode	Built-in: parallel communication Optional: serial communication
Basic Protection	Parameter upload and download function	Can achieve parameter upload or download
	Motor auto-tuning	Static auto-tuning free off load
	Distance control	Distance control with direct stop
	Start weighing compensation	Support many weighing compensations
	Acc/Dec curve	Can set Acc/Dec curve parameter and auto select optimal speed in accordance with floor distance
	Shaft self-learning	Using 32-bit data can record the shaft position accurately
	Re-leveling	Support OD re-leveling and advanced open door
	Fault protection	Provide up to 60 kinds of protection such as short circuit protection, I/O lack phase protection, over-current protection, elevator over-speed, excessive speed deviation, door machine fault, encoder disconnection, and encoder reverse etc. A complete elevator fault-dealing system
	State display	Can easily monitor I/O signals of main control board via panel

Item		Specification
I/O feature	Digital input	24 digital input terminals, input specifications are 24V and 5mA
	High voltage input	3 high voltage input terminals, specifications are 110－220VAC/DC
	Analogue input	Analogue voltage input (-10－10V)
	Communication terminal	Modbus communication
	Programmable relay output	24 relay outputs
	Encoder interface	The optional encoder interface card can be adapted to different types of encoder
	Button I/O terminals	24 button inputs and outputs, and terminal function can be set
Operation & monitoring	LCD display	Function parameter setting, state parameter check, fault code check etc.
	Small panel	3-bit LED, can achieve part of the debugging features
	Host computer	Parameter settings, upload and download, fault inquiries, call and curve monitoring etc.
Environment	Operation temperature	-10－+40℃, Max. allowed temperature is 50℃ and air temperature fluctuation is less than 0.5℃/min The derating value of the output current shall be 2% for each degree centigrade above 40－50℃.
	Storage temperature	-40－+70℃
	Location for use	Indoor, preventing from direct sunlight, no dust, corrosive, flammable gases, oil mist, water vapor, dripping or salt etc.
	Altitude	Less than 1000 meters, otherwise should be derating use
	Humidity	Less than 95%RH, non-condensing
	Oscillation	Less than 5.9m/s^2（0.6g）
Options	Encoder interface card	ABZ incremental encoder interface card (MT70-PG1-ABZ) SINCOS encoder interface card (MT70-PG2-SINCOS) UVW encoder interface card (MT70-PG3-UVW)
	Hall call board	BCD code display control board (MT71-HCB-A) Vertical dot matrix display control board (MT70-HCB-H) Horizontal dot matrix display control board (MT70-HCB-F) Ultrathin dot matrix display control board (MT70-HCB-I) LCD display control board (MT70-HCB-D)
	About panel	Panel (MT70-LCD-A) Mounting base to panel (HD-KMB) 1 meter extension cable to panel (HD-CAB-1M) 2 meter extension cable to panel (HD-CAB-2M) 3 meter extension cable to panel (HD-CAB-3M) 6 meter extension cable to panel (HD-CAB-6M)
	Power regenerative unit	Power regenerative unit (HDRU-4T025)

3.5 Dimensions and Mounting Size

MONT71 outlook schematic diagram is shown as Figure 3-1, and dimensions and gross weight are shown in Table 3-1.

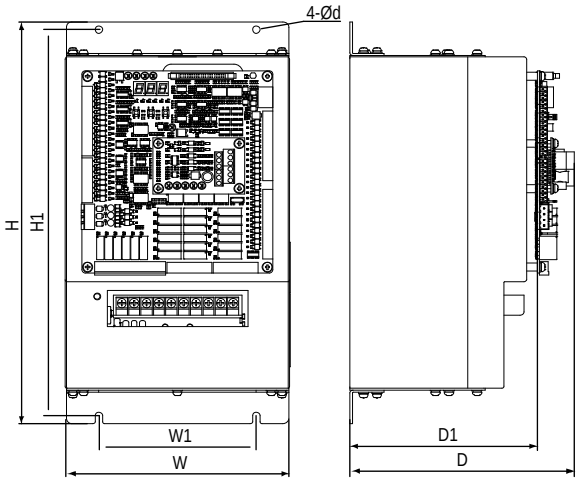


Figure 3-1 MONT71 outlook schematic diagram

Table 3-1 MONT71 dimensions and gross weight

Model	Dimension (mm)		Mounting size (mm)					GW
	W	H	W1	H1	D	D1	Aperture d	（kg）
MT71-2S2P2	200	358	140	344	200	116.5	6.5	6.3
MT71-2S3P7								
MT71-2T3P7								
MT71-4T2P2								
MT71-4T3P7								
MT71-4T5P5								
MT71-2T5P5	223	348	150	334.5	203	170.5	6.5	7.2
MT71-2T7P5								
MT71-4T7P5								
MT71-4T011								
MT71-4T015								
MT71-2T011	290	555	235	541.5	216	183	6.5	15.4
MT71-2T015								
MT71-2T018								
MT71-4T018								
MT71-4T022								
MT71-4T030								
MT71-4T037								
MT71-2T022	380	598	260	576	290	290	10.0	37.0
MT71-2T030								
MT71-4T045								

Note:

Due to elevator on-site use of other power class products are less, some detail parameters are not listed. If you need this type product, please contact our company.

Chapter 4

Control System Introduction

4.1 Control System and Precautions

MONT71 system configuration diagram is shown in Figure 4-1.

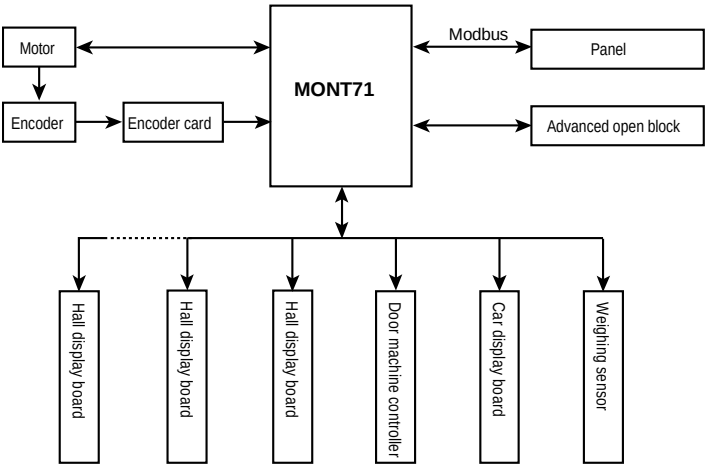


Figure 4-1 MONT71 control system configuration diagram

Danger

- The control circuit is designed as ELV (Extra Low Voltage) circuit and basically insulated with the power circuit. Do not touch the control circuit when the controller is on power.

Warning

- If the control circuit is connected to the external devices with live touchable port (SELV circuit), it should increase an additional isolating barrier to ensure that SELV classification of external devices may not be changed.
- If connect the communication terminal of the control circuit to the PC, you should choose the RS485/232 isolating converter which meets the safety requirement.

4.2 Main Control Board (MT71-MCB-A)

The main control board (MT71-MCB-A) is the core of the control system and using the industry leading 32-bit DSP as the control core, which completes high-performance traction machine vector control, and achieves signal I/O processing and elevator logic control.

Main control board (MT71-MCB-A) includes:

24 inputs (X1－X24) are optional polarity digital inputs, 3 inputs (X25－X27) are high voltage signal inputs for the safety circuit and locked-door circuit, 1 input (AI) is used to weighing analogue input, 24 outputs (Y0－Y23) are relay outputs, there are 24 (L1－L24) button I/O terminals, and one Modbus is used to communicate with specified model of hall call board in serial.

Layout of main control board:

Control terminal, jumper, Modbus communication terminal, small panel and indicators are on the main control board, shown as Figure 4-2.

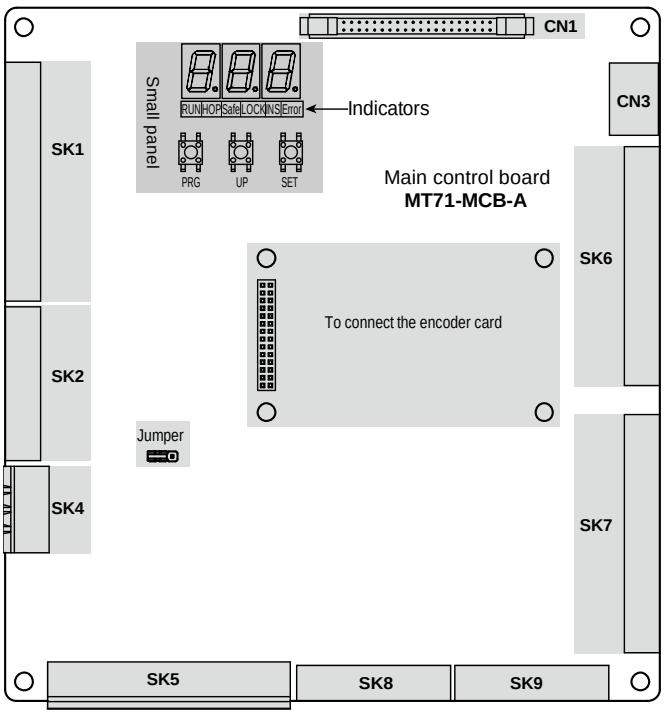


Figure 4-2 Layout of main control board

4.2.1 Terminal Description

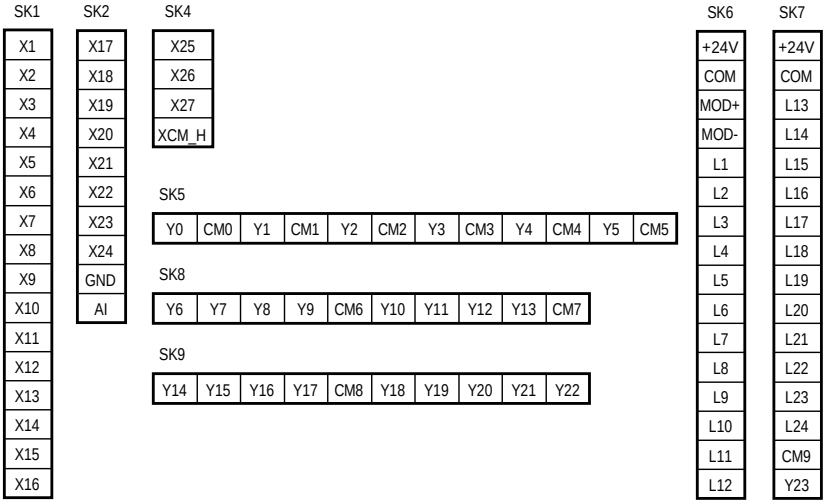


Figure 4-3 MCB terminal array

Table 4-1 MCB terminal function description

Category	Mark	Name	Function and specification
Digital input SK1, SK2	X1－X24	Digital input	Total 24 groups, programmable bipolar optional optocoupler-isolated input signals Input voltage: 0－30VDC; Input impedance: 4.7kΩ • The function is set by F12.01－F12.24
Analogue input SK2	AI	Analogue input	Input voltage range: -10－10V; input impedance: 34kΩ
	GND	Analogue input ground	Analogue input ground
High voltage input SK4	X25－X27	High voltage input terminal	Total 3 inputs, optocoupler-isolated input signals Input voltage: 110－220VAC/DC; input impedance: 22kΩ • The function is set by F12.25－F12.27
	XCM_H	High voltage input ground	High voltage input ground

Category	Mark	Name	Function and specification
Relay output SK5, SK8 SK7, SK9	Y0－Y5	Relay contact normally open output	Programmable output Contact rating: 250VAC/3A or 30VDC/1A • The function is set by F12.28－F12.33
	CM0－CM5	Common terminal of relay output	
	Y6－Y23	Relay contact normally open output	Programmable output Contact rating: 250VAC/3A or 30VDC/1A • The function is set by F12.34－F12.51
	CM6－CM9	Common terminal of relay output	CM6 is common terminal of Y6—Y9, CM7 is common terminal of Y10—Y13, CM8 is common terminal of Y14—Y17, CM9 is common terminal of Y18—Y23
Elevator buttons of SK6, SK7	L1－L24	Elevator button interfaces	The button input connects with button indicator output using for button lighting output 24V • The function is set by F13.01－F13.24
Power supply SK6	+24V	+24V power supply	External DC 24V power input, as I/O circuits and communication circuit power
	COM	Power supply ground	Power supply ground
Communi-cation SK6	MOD+, MOD-	Modbus communication	For Modbus communicating with hall call board (MT70-HCB-*), and need F26.06 to open this function (hall call floors of L terminals is no valid in this case) • Recommended to use shielded twisted pair
Communi-cation CN3	CN3	Modbus communication terminal	Optional panel, to check and modify the parameter of main control board
Connection terminal	CN1	Control board cable	Connected with the main circuit control signal

4.2.2 Indicator Description

The indicators are on the main control board (MT71-MCB-A) and their position and description are respectively shown as Figure 4-2 and Table 4-2.

Table 4-2 Indicator description

Indicator mark	Indicator name	Meaning
RUN	Elevator operation indicator	Flashing at run; lighting at stop
HOP	HCB Modbus communication indicator	Flashing at normal communication; extinguishing at abnormal
Safe	Safety circuit indicator	Lighting at safety circuit closing; extinguishing at disconnection
LOCK	Locked-door circuit indicator	Lighting at locked-door circuit closing; extinguishing at disconnection
INS	Inspection indicator	Lighting at elevator inspection state; extinguishing at other states
Error	Fault indicator	Lighting at serious fault, flashing at general fault; extinguishing at no fault

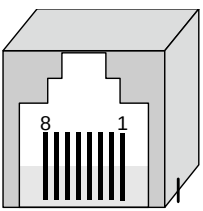
4.2.3 Jumper Description

Table 4-3 Jumper description

Category	Function and setting description	Factory setting
Jumper	Digital input terminal X1－X24 are high level/ low level selections: When pin 1 and pin 2 are short-connected, the low level is valid; When pin 2 and pin 3 are short-connected, the high level is valid. (Factory setting)	

4.2.4 Modbus Communication Terminal Description

The pin and definition of Modbus communication terminal (RJ45) are shown in Figure 4-4.



RJ45 pin	1, 3	2	4—6	7	8
Pin definiftion	+5V	MOD+	GND	MOD-	Reserved

Figure 4-4 Modbus communication terminal

4.2.5 Small Panel Description

The small panel is designed with 3-bit digital tube and three keys, which displays the information of main control board (MT71-MCB-A) and inputs simple command. The data menu content is divided into F0－F8.

Function description of small panel key

Three keys are respectively PRG, UP and SET. Their marks are beneath the keys as Figure 4-5.

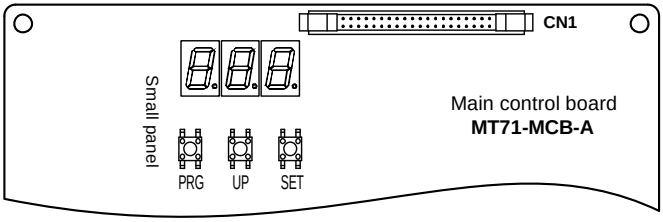


Figure 4-5 Definition of small panel keys

PRG key: At any state, pressing **PRG** key can display the present function group number, and can change the function group number via **UP** key.

UP key: At function group number menu, via **UP** key to increase group number which can be changed cyclically. At specific functional data menu, you can also input data (or simple command);

SET key: At function group number menu, pressing **SET** key can enter data menu of this function group. At specific functional data menu, after input simple command, press **SET** key to save, and then enter into data menu display of F0.

Note:

Pressing three or any two keys of small panel at the same time is invalid.

Small panel display function

The small panel displays the information of MCB which respectively are Group F0－F8. Specific categories are shown as Table 4-4.

Table 4-4 Small panel display function group category

Function group	Function group content	Function group	Function group content
F0	Floor and run direction information	F5	Display run times
F1	Call command input	F6	Reserved
F2	Fault reset	F7	Shaft self-learning command input
F3、F4	Reserved	F8	Test function

F0 (floor and run direction information): At power-on the function group content of Group F0 is defaulted display. The last two data of 3-bit digital tube displays the present elevator floor, and the first digital tube displays the direction. At elevator stopping state, the first digital tube does not display.

At elevator up or down running, the digital tube indicates up or down running direction. Flashing at run, and lighting at stop.

In case of failure in the system (originally no fault), the digital tube alternate display automatically switches from the fault code to F0 data menu. If the fault disappears automatically, it will enter F0 menu.

F1 (call command input): After enter Group F1, digital tube displays "1" (physical floor), which can be set via pressing **UP** key and the range is 【1－maximum floor】.

After set the running destination floor, then press **SET** key to save and it will automatically switch to F0 data menu.

F2 (fault reset): After enter Group F2, digital tube displays "0", then press **UP** key to set and the range 【0,1】. 1: system fault reset command. After save the setting via pressing **SET** key, then clear the present system fault and automatically switch to Group F0 finally.

F5 (display run times): After enter Group F5, digital tube cyclically displays the run times. Each time cyclically displays one-bit from left to right, after completes, it will begin to re-cycle from the highest bit, which can display up to 999,999 times.

F7 (shaft self-learning command input): After enter Group F7, digital tubes display "0", then press **UP** key to set and the range is 【0—2】. 1: Start shaft self-learning (do not clear F27.01－F27.25), 2: Start shaft self-learning (clear F27.01－F27.25).

Press **SET** key to save, when meet self-learning conditions, the elevator begins self-learning, and display data menu of Group F0, after the self-learning it automatically resets to zero. Finally it switches to Group F0.

F8 (test function): After enter Group F8, digital tubes display "00", then press **UP** key to set and the range is 【00－05】. 00: no function; 01: locked hall call; 02: locked open door; 03: locked over-load; 04: locked limitation switch; 05: allow elevator random run 500 times.

Press **SET** key to save, digital tubes are flashing to display "E88", which means the present setting of the elevator is at testing state. Press **PRG** key to reset to zero.

In addition, when the small panel of the main control board enters into Group F8 and in the testing function mode, **SET** key will be equivalent to close button.

4.2.6 Terminal Connection

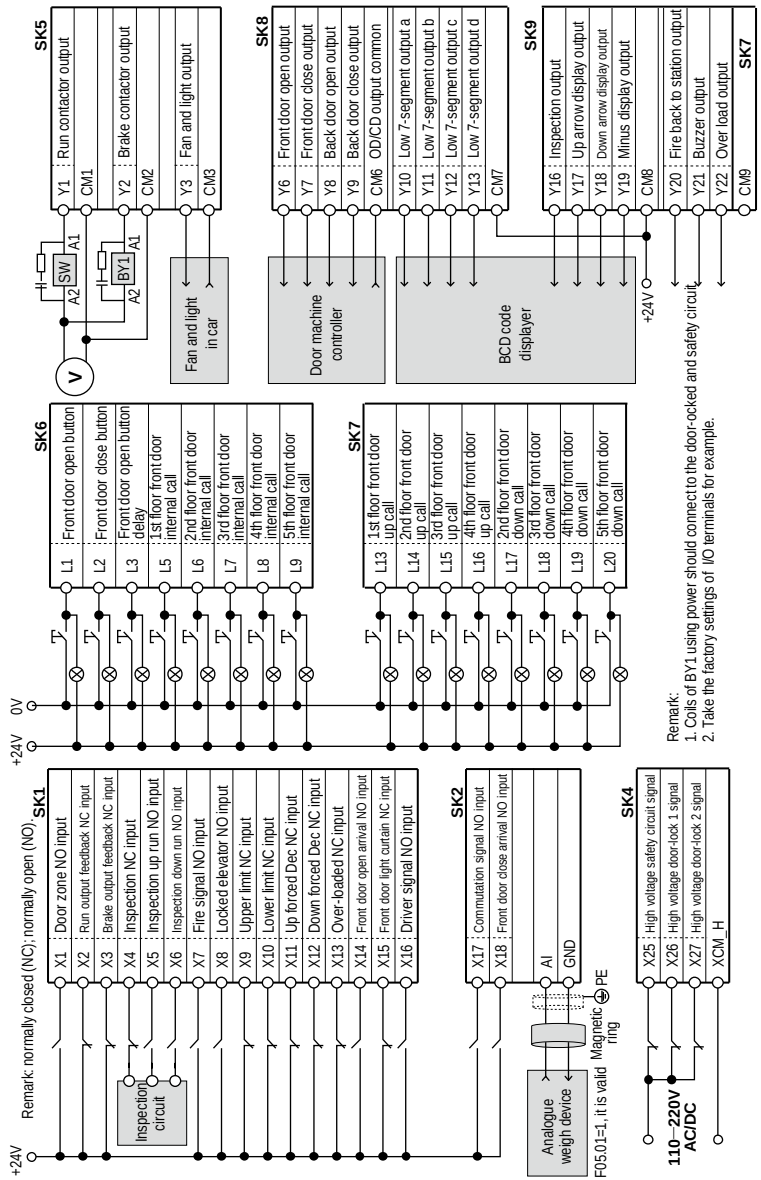

SK5
Y1 : Run contactor output
CM1
Y2 : Brake contactor output
CM2
Y3 : Fan and light output
CM3
SK8
Y6 : Front door open output
Y7 : Front door close output
Y8 : Back door open output
Y9 : Back door close output
CM6 : OD/CD output common
Y10 : Low 7-segment output a
Y11 : Low 7-segment output b
Y12 : Low 7-segment output c
Y13 : Low 7-segment output d
CM7
SK9
Y16 : Inspection output
Y17 : Up arrow display output
Y18 : Down arrow display output
Y19 : Minus display output
CM8
Y20 : Fire back to station output
Y21 : Buzzer output
Y22 : Over load output
CM9
SK7
SW
BY1
A1
A2
Fan and light in car
Door machine controller
BCD code displayer
+24V
SK6
L1 : Front door open button
L2 : Front door close button
L3 : Front door open button delay
L5 : 1st floor front door internal call
L6 : 2nd floor front door internal call
L7 : 3rd floor front door internal call
L8 : 4th floor front door internal call
L9 : 5th floor front door internal call
SK7
L13 : 1st floor front door up call
L14 : 2nd floor front door up call
L15 : 3rd floor front door up call
L16 : 4th floor front door up call
L17 : 2nd floor front door down call
L18 : 3rd floor front door down call
L19 : 4th floor front door down call
L20 : 5th floor front door down call
+24V
0V
Remark:
1. Coils of BY1 using power should connect to the door-locked and safety circuit.
2. Take the factory settings of I/O terminals for example.
Remark: normally closed (NC); normally open (NO).
SK1
X1 : Door zone NO input
X2 : Run output feedback NC input
X3 : Brake output feedback NC input
X4 : Inspection NC input
X5 : Inspection up run NO input
X6 : Inspection down run NO input
X7 : Fire signal NO input
X8 : Locked elevator NO input
X9 : Upper limit NC input
X10 : Lower limit NC input
X11 : Up forced Dec NC input
X12 : Down forced Dec NC input
X13 : Over-loaded NC input
X14 : Front door open arrival NO input
X15 : Front door light curtain NC input
X16 : Driver signal NO input
SK2
X17 : Commutation signal NO input
X18 : Front door close arrival NO input
AI
GND
SK4
X25 : High voltage safety circuit signal
X26 : High voltage door-lock 1 signal
X27 : High voltage door-lock 2 signal
XCM_H
+24V
Inspection circuit
Analogue weigh device
F05.01=1, it is valid
Magnetic ring
PE
110~220V AC/DC

Figure 4-6 Five floors of full selective connection (it defaults the factory setting)

4.3 BCD Code Display Control Board (MT71-HCB-A)

BCD code display control board is one of the important interfaces for user and MONT71 interaction.

Divided into two types in accordance with installation:

- Installing outside the hall, it is call for hall call board.
- Installing inside the car, it is call for internal call board.

Function

Hall call board: To receive the user calling and display information about where floor elevator and the running direction etc.

Internal call board: To display information about elevator of floor and the running direction etc.

Dimensions

BCD coder display control board (MT71-HCB-A) and its size shown as Figure 4-7, and the unit is mm.

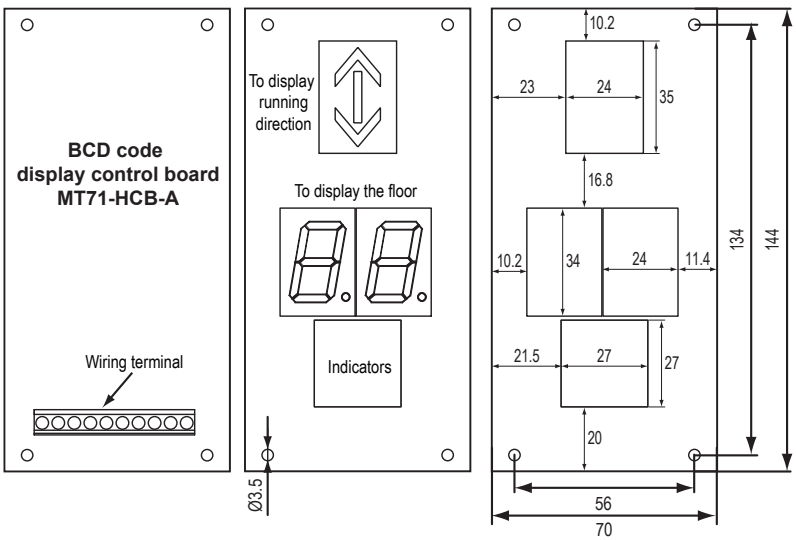


Figure 4-7 BCD code display control board and its size

Function description

Indicators: You can set indicators of MT71-HCB-A via parameters F12.28—F12.51.

Wiring terminal description

The BCD code display control board wiring terminals are shown as Figure 4-8 and Table 4-5.

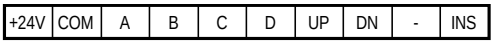


Figure 4-8 BCD code display control board of terminal layout

Table 4-5 BCD code display control board of terminal function description

Category	Mark	Name	Function description
Power supply	24V	+24V power supply	External provide DC 24V power, as MT71-HCB-A working power supply
	COM	Power ground	Power supply ground
Input terminals	A	A signal input	The floor displays LED control signal A
	B	B signal input	The floor displays LED control signal B
	C	C signal input	The floor displays LED control signal C
	D	D signal input	The floor displays LED control signal D
	UP	UP signal input	The up arrow indicates LED control signal
	DN	Down signal input	The down arrow indicates LED control signal
	-	Minus signal input	The minus LED control signal
	INS	Inspection signal input	The inspection indicates LED control signal

Input terminals

The input terminals can change the corresponding terminal functions via F12.28—F12.51 (relays Y0—Y23 of main control board). Such as:

You can simply set F12.38 as 22 (relay Y8 is set to overload instruction output) so as to reposition INS indicator connected to the relay Y8 as overload indicator.

4.4 Advanced Open Block (MT70-AOB-A)

Advanced open block (MT70-AOB-A) is MONT71 ancillary product, which mainly achieves elevator re-leveling and door advanced-open function.

Re-leveling function:

Because the wire rope has certain ductility, when the load inside car changes dramatically after elevator leveling, the sill of elevator cab will appear raising or sinking, which makes the leveling elevator error occurs and might cause safety hazards to the car persons.

Equipping with the advanced open block can run at re-leveling speed (F04.04) in the elevator open door state to leveling position.

Advanced-open function

When the elevator is running normally, the speed is slower than advanced-open speed (F04.05) in the stopping course and the door zone signal is valid, the MT70-AOB-A will jump out the locked-door signal through locked-door contactor, and achieve advanced-open door to make more efficiency.

Dimensions

The advanced open block (MT70-AOB-A) and the dimension are shown as Figure 4-9, and the unit is mm.

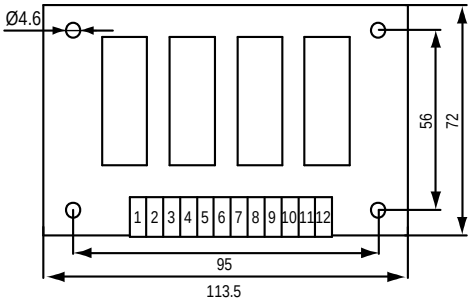


Figure 4-9 MT70-AOB-A and dimension

4.4.1 Terminal Description

Table 4-6 MT70-AOB-A terminal function description

Mark		Name	Function description and specification
3	+24V	+24V power supply	External providing +24V power supply
4	SEL	SX1, SX2 output common terminal	When SEL and +24V are short-circuited, the outputs of SX1 and SX2 are high active; when SEL and COM are short-circuited, the outputs of SX1 and SX2 are low active
5	COM	Power supply ground	Power supply ground
6（1）	FL1L（FL1）	Re-leveling door zone signal 1	Refer to section 4.4.2 Terminal connection (page 35) for the concrete wiring
7（2）	FL2L（FL2）	Re-leveling door zone signal 2	
8	SY	Locked-door contactor	When meet re-leveling or advanced-open conditions, the MCB controls the locked-door contactor
9	SX1	Door zone output	It must use SEL to select high active or low active output
10	SX2	Locked-door contactor output	
11/12	SO1/SO2	Locked-door circuit	

4.4.2 Terminal connection

Door zone signal input low level active

The connection is shown as Figure 4-10.

If there is NPN photoelectric, the photoelectric collector output will connect with FL1L and FL2L, the emitter will connect with COM, FL1 and FL2 will connect with +24V.

If there is dry contact, the switch at one end will connect with FL1L and FL2L, at the other end will connect with COM, FL1 and FL2 will connect with +24V.

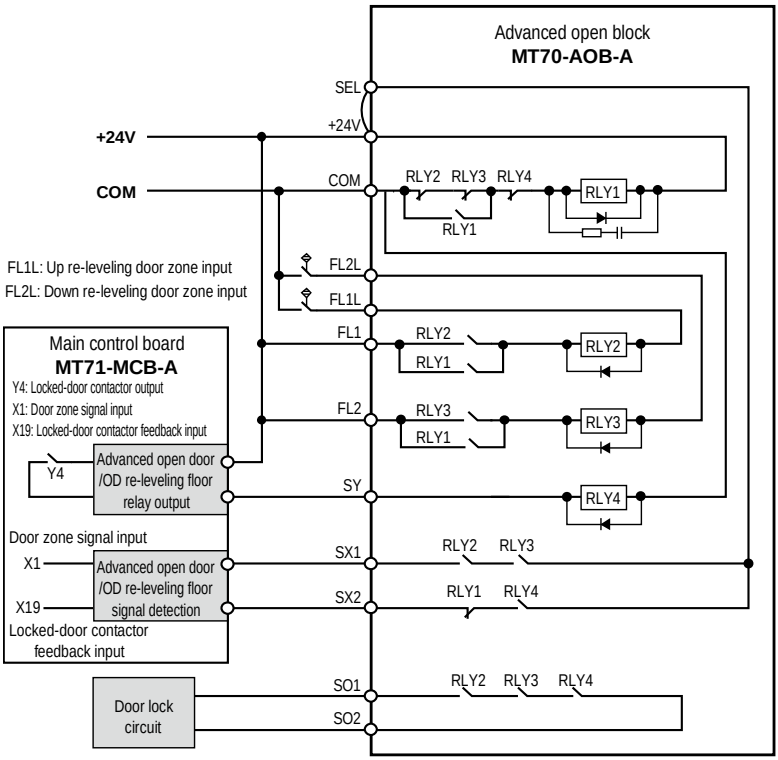


Figure 4-10 Door zone signal as dry contact or NPN-photoelectric of connection

Door zone signal input high level active

The connection is shown as Figure 4-11.

If there is PNP photoelectric, the photoelectric collector output will connect with FL1 and FL2, the emitter will connect with +24V, FL1L and FL2L will connect with COM.

If there is dry contact, the switch at one end will connect with FL1 and FL2, at the other end will connect with +24V, FL1L and FL2L will connect with COM.

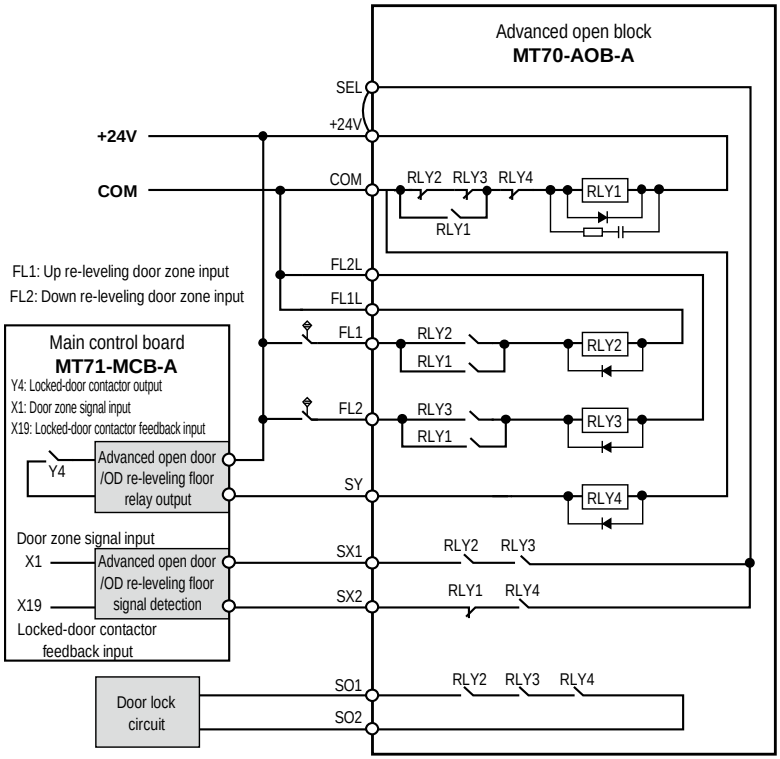


Figure 4-11 Door zone signal as dry contact or PNP-photoelectric of connection

4.4.3 Logic Order

Figure 4-12 describes the various relays and the relationship between the respective signals, the figure's high level indicates that its signal is valid.

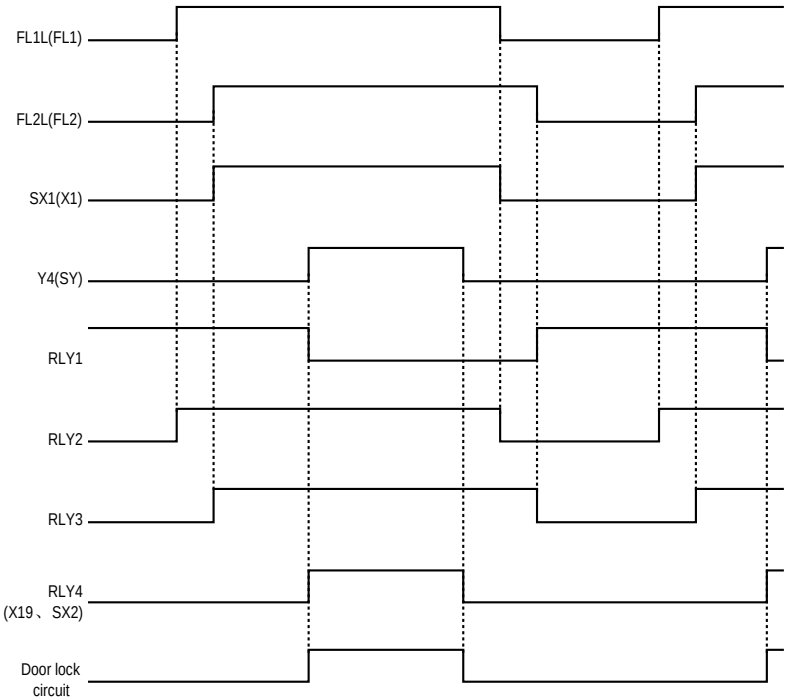


Figure 4-12 Advanced open block of working time diagram

Starting working at power-on and according to the connection of section 4.4.2, the relay RLY1 will operate and its corresponding contact will act.

When elevator is running and the signal is detected on up re-leveling FL1L (FL1) that is effective, the relay RLY2 will work and the corresponding contact will act.

When the signal is detected on down re-leveling FL2L (FL2) that is effective, the relay RLY3 will work and its corresponding contact will act, and the door zone signal input SX1 (X1) will be caused at the same time.

When MONT71 series detect the door zone signal SX1 (X1), advanced-open door output relay Y4 (SY) will output, if relays RLY2 and RLY3 are effective while relay RLY4 is effective, the corresponding contact will act.

When MONT71 detect the pre-opening signal SX2 (X19) that is effective, the locked-door will work and be short-circuited so as to achieve the advanced-open door.

After open door in advanced, the advanced-open output relay Y4 (SY) will disconnect, the relay RLY4 will not work, the corresponding contact will act, and the input signal of the advanced-open signal will be invalid and the locked-door lock will disconnect.

When the up re-leveling signal FL1L (FL1) is invalid, the relay RLY2 will not work and the door zone input signal will be invalid.

When the down re-leveling signal FL2L (FL2) is invalid, the relay RLY3 will not work but the relay RLY1 will work and its corresponding contact will act.

Note:

The factory default parameter is not set X19 and Y4 function. Please set the appropriate parameters if you need the advanced open door and the open re-leveling functions.

4.4.4 Re-leveling Door Zone Sensor and Its Installation

If you want to use the advanced open block and the re-leveling functions, there are at least three leveling sensors must be configured, whose installation distance is shown as Figure 4-13.

Note:

The leveling sensor must be installed in order; otherwise the direction of re-leveling run or advanced open door will reverse.

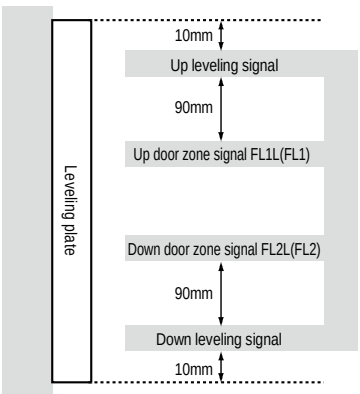


Figure 4-13 Re-leveling door zone sensor installation

4.4.5 Parameter Setting

Two kinds of situations may occur in the field.

Situation 1:

There are four sensor signals in the field: up leveling signal, up re-leveling door zone signal input FL1L (FL1), down re-leveling door zone signal input FL2L (FL2), down leveling signal.

Processing methods:

1. Connect up and down leveling signals to X20 and X21 of main control board.

2. Input the up and down re-leveling door zone signal to the FL1L (FL1) and FL2L (FL2) of advanced open block, which is defaulted normally open.

At the elevator up running, when the up leveling signal, FL1L (FL1) signal and FL2L (FL2) signal are detected, the main control board will process the signal to realize the open door in advanced function; the same as at elevator down running.

To set parameters:

Parameter	Name	Setting value	I/O point
F12.01	Function selection of terminal X1	3 (Door zone normally open input)	X1
F12.19	Function selection of terminal X19	8 (Locked door output feedback normally open input)	X19
F12.20	Function selection of terminal X20	1 (Up leveling normally open input)	X20
F12.21	Function selection of terminal X21	2 (Down leveling normally open input)	X21
F12.30	Function selection of relay Y4	27 (Locked-door contactor output)	Y4

Situation 2:

There are three sensor signals in the field: up leveling signal, door zone signal, and down leveling signal.

Processing methods:

1. Connect the up and down leveling signals to X20 and X21 of main control board.

2. Disconnect the door zone signal to the X1 of main control board, connect to the FL1L (FL1) and FL2L (FL2), which means that connect FL1L (FL1) and FL2L (FL2) to the door zone signal at the same time.

At elevator up running, the up leveling signal is detected, and the detected FL1L (FL1) signal and FL2L (FL2) signal are effective simultaneously, advanced-open function will be enabled; the same as at elevator down running.

To set parameters:

The situation 2 is same as situation 1.

Note:

1. In the situation 2, it needs professional person to make test by shor-circuiting FL1L (FL1) and FL2L (FL2).
2. For the safety, it is recommended to use situation 1 in order to ensure the safe and efficient operation of the system.

4.5 Encoder Interface Card

4.5.1 Encoder Interface Card Selection

MONT71 provide three kind encoder interface cards (optional) and their models and functions are shown as Table 4-7.

Table 4-7 Encoder interface card

Encoder interface card	Encoder interface card function
ABZ incremental encoder interface card （MT70-PG1-ABZ）	Support differential, OC, push-pull signal input and pulse output; Apply to asynchronous motor close-loop vector control (VC)
SINCOS encoder interface card （MT70-PG2-SINCOS）	Support sine and cosine signal input; support pulse output; Apply to synchronous motor close-loop vector control (VC)
UVW encoder interface card （MT70-PG3-UVW）	Support 5V-line drive ABZ and UVW signal input; support pulse output; Apply to synchronous motor close-loop vector control (VC)

Wiring requirement of encoder interface card:

1. Encoder interface card wire should be laid separately and kept distance from power cables and forbidden to parallel with them.

2. Encoder interface card wire should be shield wire, and shield layer should connect to PE near controller. (In order to avoid being disturbed, only one terminal connects to ground).

3. Encoder interface card wire should be pulled on pipe separately, and metal crust should be connected to ground reliably.

4.5.2 ABZ Incremental Encoder Interface Card (MT70-PG1-ABZ)

ABZ incremental encoder interface card is shown as Figure 4-14.

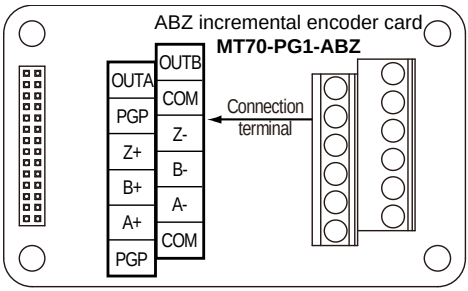


Figure 4-14 ABZ incremental encoder interface card

Terminal description

Table 4-8 Connection terminal function description

Mark	Description	Mark	Description
PGP	+12V power supply output	Z+ / Z-	Z+ / Z- signals of encoder
COM	Power ground, isolated from GND	OUTA	Output A signal, the output type is OC output
A+ / A-	A+ / A- signals of encoder	OUTB	Output B signal, the output type is OC output
B+ / B-	B+ / B- signals of encoder	COM	Output ground, isolated from GND

Encoder interface card connection

The wiring diagram of the differential output of the encoder is shown as Figure 4-15.

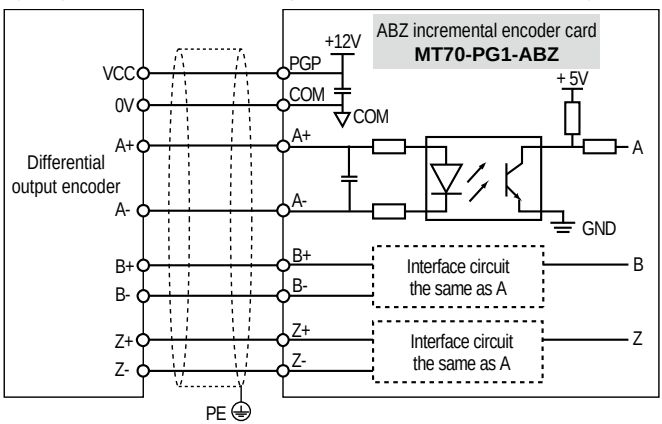


Figure 4-15 Connection of differential output encoder

The wiring diagrams of the open-collector output encoder and the push-pull output encoder are respectively shown as Figure 4-16 and Figure 4-17.

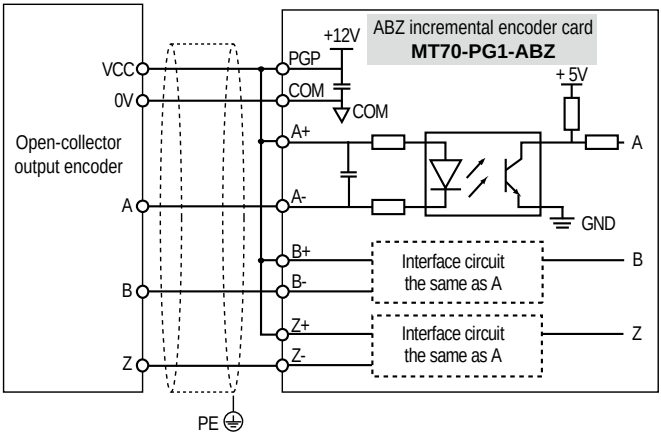


Figure 4-16 Connection of open collector output encoder

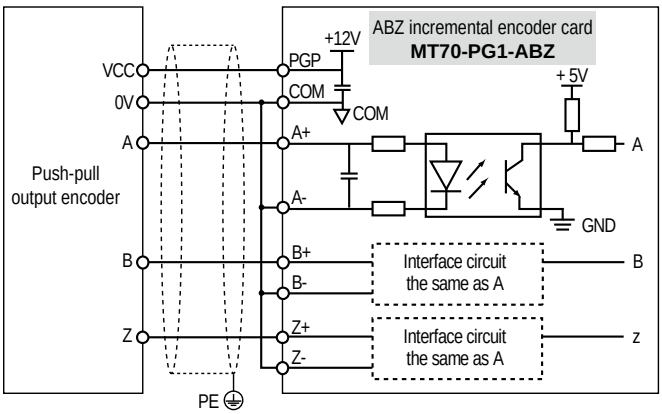


Figure 4-17 Connection of push-pull output encoder

4.5.3 SINCOS Encoder Interface Card (MT70-PG2-SINCOS)

SINCOS encoder interface card is shown as Figure 4-18.

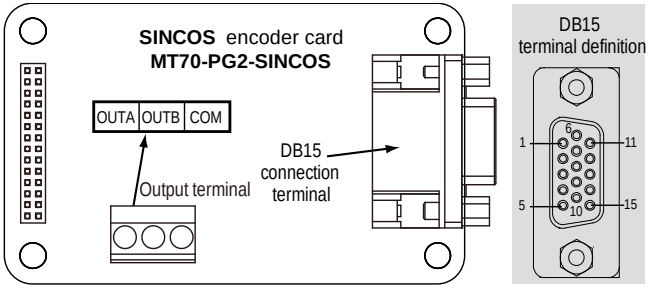


Figure 4-18 SIN/COS encoder interface card

Terminal description

The DB15 terminal and the output terminal definition are shown as Figure 4-18, and signal description is shown as Table 4-9 and Table 4-10.

Table 4-9 DB15 connection terminal signal description

No.	Name	Description	No.	Name	Description
1	B-	Differential signal B-	8	B+	Differential signal B+
2	NC	Invalid	9	PGVCC	+5V power supply
3	R+	Differential signal R+	10	C+	Differential signal C+
4	R-	Differential signal R-	11	C-	Differential signal C-
5	A+	Differential signal A+	12	D+	Differential signal D+
6	A-	Differential signal A-	13	D-	Differential signal D-
7	PGGND	Power supply ground	14、15	NC	Invalid

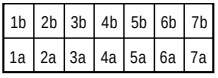
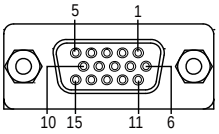
Table 4-10 Output terminal signal description

No.	Terminal name	Terminal description
1	OUTA	Output signal A, output type is OC output
2	OUTB	Output signal B, output type is OC output
3	COM	Output signal site, isolated from GND

Encoder interface card connection

We recommend HEIDENHAIN ERN1387 encoder for use.The 1387 double-socket and DB15 connection terminal are shown as Table 4-11.

Table 4-11 1387 double-socket and DB15 terminal relation

1387 double-socket		DB15 terminal	
			
5a	B-	1	B-
4b	R+(Z+)	3	R+
4a	R-(Z-)	4	R-
6b	A+	5	A+
2a	A-	6	A-
3a+5b	0V	7	PGGND
3b	B+	8	B+
7a+1b	5V	9	PGVCC
7b	C+(SIN-)	10	C+
1a	C-(SIN+)	11	C-
2b	D+(COS+)	12	D+
6a	D-(COS-)	13	D-

4.5.4 UVW Encoder Interface Card (MT70-PG3-UVW)

UVW encoder interface card is shown as Figure 4-19.

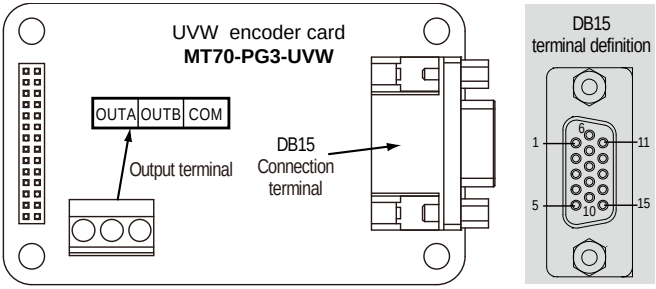


Figure 4-19 UVW encoder interface card

Terminal description

The DB15 terminal and its output terminal definition are shown as Figure 4-19, and signal description is shown as Table 4-12 and Table 4-13.

Table 4-12 DB15 connection terminal signal description

No.	Name	Description	No.	Name	Description
1	A+	Differential signal A+	9	V+	Differential signal V+
2	A-	Differential signal A-	10	V-	Differential signal V-
3	B+	Differential signal B+	11	W+	Differential signal W+
4	B-	Differential signal B-	12	W-	Differential signal W-
5	Z+	Differential signal Z+	13	PGVCC	+5V power supply
6	Z-	Differential signal Z-	14	PGGND	Power supply ground
7	U+	Differential signal U+	15	NC	Invalid
8	U-	Differential signal U-			

Table 4-13 Output terminal signal description

No.	Terminal name	Terminal description
1	OUTA	Output signal A, output type is OC output
2	OUTB	Output signal B, output type is OC output
3	COM	Output signal site, isolated from GND

Chapter 5

Installation and Wiring

5.1 Installation Precautions

Danger

- Do not install if MONT71 is imcomplete or impaired.
- Make sure that MONT71 is far from the explosive and combustible things.
- Do not operate MONT71 until the power is cut-off 10 minutes later.

Warning

- Do not play metal into MONT71 when installing.

5.2 Requirement for the Installation Site

Ensure the installation site meeting the following requirements:

- Do not install at the direct sunlight, moisture, water droplet location;
- Do not install at the combustible, explosive, corrosive gas and liquid location;
- Do not install at the oily dust, fiber and metal powder location;
- Be vertical installation on fire-retardant material with a strong support;
- Make sure adequate cooling space for MONT71 so as to keep the ambient temperature between - 10—+ 40℃;
- Install at where the vibration is less than that 5.9m/s^2 (0.6g).

Note:

1. It needs derating use if operation temperature exceeds 40℃. The derating value shall be 2% for each degree centigrade.
   Max. allowed temperature is 50℃.
2. Keep ambient temperature between -10－+40℃. It can improve operation performance if install at the location with good ventilation or cooling devices.

5.3 Wiring Precautions

Danger

- Only qualified electrical engineer can perform wiring job.
- Only when the power supply switch is completely off can you do the wiring job.
- You can't open MONT71 cover to do wiring operation until the power is cut-off 10 minutes later. Do not wire or detach MONT71 internal devices at power-on situation.
- Check the wiring carefully before connecting emergency stop or safety circuit.
- The earth terminal PE of MONT71 must be reliable earthing. It must use two separate earth wire due to the leakage current from MONT71 to ground.
- It must use Type B mode when utilize earth leakage protection devices (ELCB/RCD).
- Do not touch the wire terminals of MONT71 when it is live. The main circuit terminals are neither allowed connecting to the enclosure nor short-circuiting.
- Bare metal parts of connections of high voltage input terminals (X25－X27) and relay output terminals (Y0－Y23) of main control board must be wrapped with insulating tape.

Warning

- Do not do dielectric strength test on MONT71.
- Do wiring connection of the braking resistor according to the wiring figure.
- Make sure the terminals are fixed tightly.
- Do not connect the AC supply cable to the output terminals U/V/W.
- Do not connect the phase-shifting capacitors to the output circuit.
- MONT71 DC bus terminals must not be short-circuited.

5.4 Selection of Main Circuit Peripheral Devices

Please refer to Table 5-1 for recommended specifications.

Table 5-1 Recommended MONT71 peripheral devices

Model	Input protection		Power cable		Signal cable (mm^2)
	MCCB (A)	Contactor (A)	Supply cable (mm^2)	Motor cable (mm^2)	
MT71-2S2P2	32	20	4.0	2.5	≥0.5
MT71-2S3P7	63	32	4.0	4.0	≥0.5
MT71-2T3P7	40	32	4.0	4.0	≥0.5
MT71-2T5P5	63	40	6.0	6.0	≥0.5
MT71-2T7P5	63	40	6.0	6.0	≥0.5
MT71-2T011	100	63	16	16	≥0.5
MT71-2T015	125	100	25	25	≥0.5
MT71-2T018	160	100	25	25	≥0.5
MT71-2T022	200	125	35	35	≥0.5
MT71-2T030	200	125	50	50	≥0.5
MT71-4T2P2	16	10	1.5	1.5	≥0.5
MT71-4T3P7	25	16	2.5	2.5	≥0.5
MT71-4T5P5	32	25	4.0	4.0	≥0.5
MT71-4T7P5	40	32	4.0	4.0	≥0.5
MT71-4T011	63	40	6.0	6.0	≥0.5
MT71-4T015	63	40	6.0	6.0	≥0.5
MT71-4T018	100	63	10	10	≥0.5
MT71-4T022	100	63	16	16	≥0.5
MT71-4T030	125	100	25	25	≥0.5
MT71-4T037	160	100	25	25	≥0.5
MT71-4T045	200	125	35	35	≥0.5

5.5 Power Terminal and Wiring

Danger

- The bare portions of the power cables must be bound with insulation tapes.

Warning

- Ensure that AC supply voltage is the same as MONT71 rated input voltage.

5.5.1 Power Terminal Description

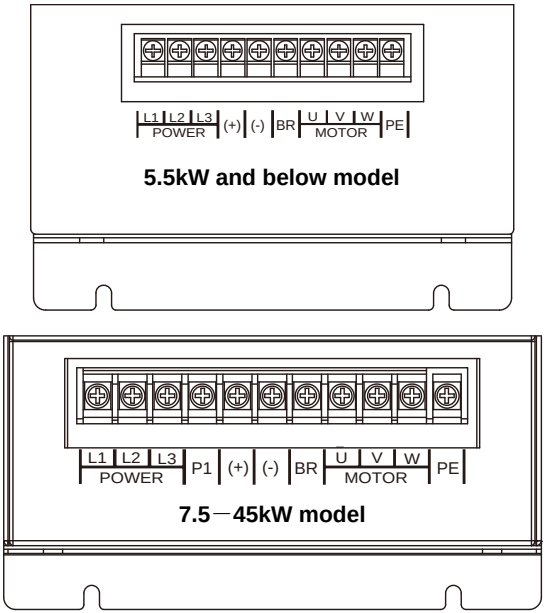


Figure 5-1 MONT71 power terminal diagram

Table 5-2 MONT71 power terminal function description

Terminal	Function description
L1、L2、L3	Three-phase AC power input terminals
U、V、W	MONT71 output terminals, connect to three-phase AC motor
P1、(+)	DC reactor connection terminals
(+)、(-)	DC supply input terminals; DC input terminals of power regenerative unit
(+)、BR	Braking resistor connection terminals
PE	Earth terminal, connect to the ground

5

5.5.2 Power Terminal Wiring

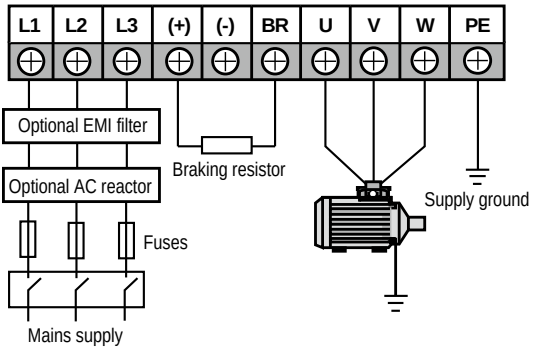


Figure 5-2 5.5kW and below model power terminal connection

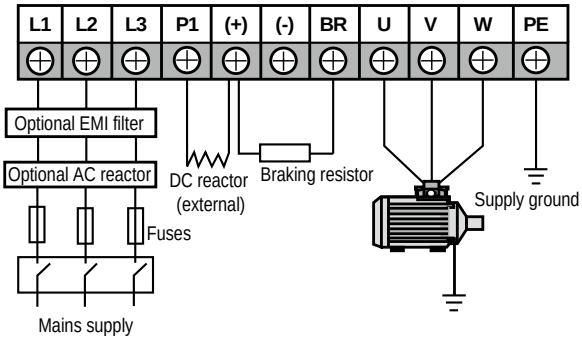


Figure 5-3 7.5—45kW model power terminal connection

5.6 Braking Resistor Selection

Connect the braking resistor to the (+) and BR of power terminal. Refer to section 5.5.2 Power Terminal Wiring and Table 5-3 for the selection.

All series is built-in dynamic braking unit.

Table 5-3 Recommended specification of braking resistor

Model	Motor (kW)	Recommended value (Ω)			Recommended power (kW)	
		Min	Max	Recommended	Synchronous	Asynchronous
MT71-2S2P2	2.2	26	130	50	1	1
MT71-2S3P7	3.7	26	90	30	1.6	1.2
MT71-2T3P7	3.7	26	50	30	1.6	1.2
MT71-2T5P5	5.5	17	27	20	2	1.6
MT71-2T7P5	7.5	11	20	15	3.2	2
MT71-2T011	11	11	20	15	4	3.2
MT71-2T015	15	10	16	12	5	4
MT71-2T018	18.5	10	16	12	6.4	5
MT71-2T022	22	7	10	9	8	6.4
MT71-2T030	30	7	10	9	10	8
MT71-4T2P2	2.2	56	210	100	1	1
MT71-4T3P7	3.7	56	144	80	1.6	1.2
MT71-4T5P5	5.5	56	100	70	2	1.6
MT71-4T7P5	7.5	56	72	64	3.2	2
MT71-4T011	11	34	48	40	4	3.2
MT71-4T015	15	34	41	36	5	4
MT71-4T018	18.5	17	31	24	6.4	5
MT71-4T022	22	17	27	20	8	6.4
MT71-4T030	30	11	20	15	10	8
MT71-4T037	37	10	16	12	12	10
MT71-4T045	45	7	10	9	18	15

5.7 Meet EMC Requirement of Installation

5.7.1 Correct EMC Installation

According national standards GB/T12668.3, MONT71 should meet the two requirements of electromagnetic interference (EMI) and anti-electromagnetic interference. The international standards IEC/61800-3 (VVVF drive system part 3: EMC specifications and test methods) are identical to the national standards GB/T12668.3.

MONT71 are designed and produced according to the requirements of IEC/61800-3. Please install as per the description below so as to achieve good electromagnetic compatibility (EMC).

In a drive system, MONT71, control equipment and sensors are installed in the same cabinet, the electromagnetic noise should be suppressed at the main connecting points with the EMI filter and input reactor installed in cabinet to satisfy the EMC requirements.

The most effective but expensive measure to reduce the interference is to isolate the noise source and the noise receiver, which should be considered in mechanical system design phase. In driving system, the noise source can be MONT71, braking unit and contactor. Noise receiver can be automation equipment, encoder and sensor etc.

The mechanical/system is divided into different EMC areas according to its electrical characteristics. The recommended installation positions are shown in Figure 5-4.

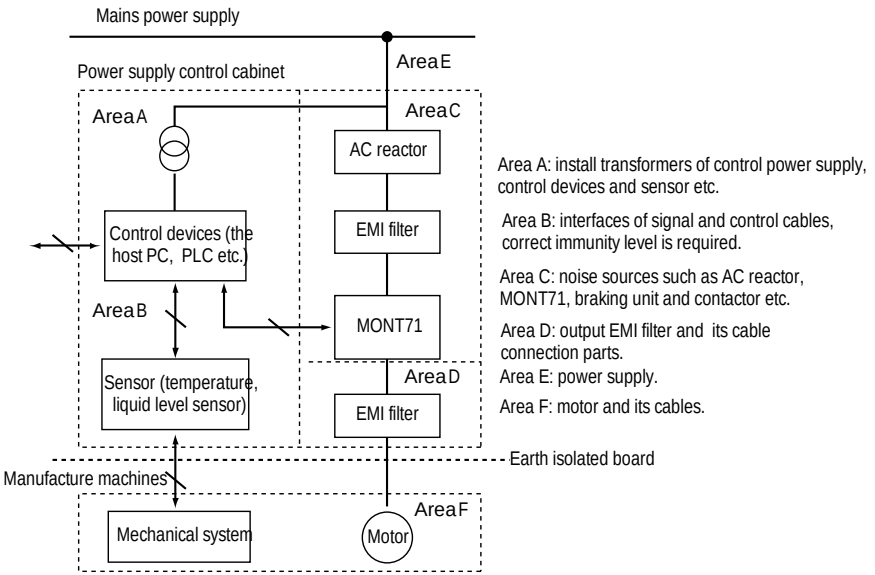

Mains power supply
Power supply control cabinet
Area E
Area A
Area C
AC reactor
Control devices (the host PC, PLC etc.)
EMI filter
Area B
MONT71
Area D
Sensor (temperature, liquid level sensor)
EMI filter
Earth isolated board
Manufacture machines
Area F
Mechanical system
Motor
Area A: install transformers of control power supply, control devices and sensor etc.
Area B: interfaces of signal and control cables, correct immunity level is required.
Area C: noise sources such as AC reactor, MONT71, braking unit and contactor etc.
Area D: output EMI filter and its cable connection parts.
Area E: power supply.
Area F: motor and its cables.

Figure 5-4 System wiring sketch

Remarks:

- All areas should be isolated in space to achieve electromagnetic decoupling effect.
- The minimum distance between areas should be 20cm, and use earthing bars for decoupling among areas, the cables from different area should be placed in different tubes.
- EMI filters should be installed at the interfaces between different areas if necessary.
- Bus cable (such as RS485) and signal cable must be shielded.

5.7.2 Wiring Requirement

In order to avoid interference intercoupling, it is recommended to separate the motor cables and the control cables from power supply cables, and keep enough distance among the cables. Especially when the cables are laid in parallel and the cable length is long, the signal cables should cross the power supply cables perpendicularly as shown in Figure 5-5.

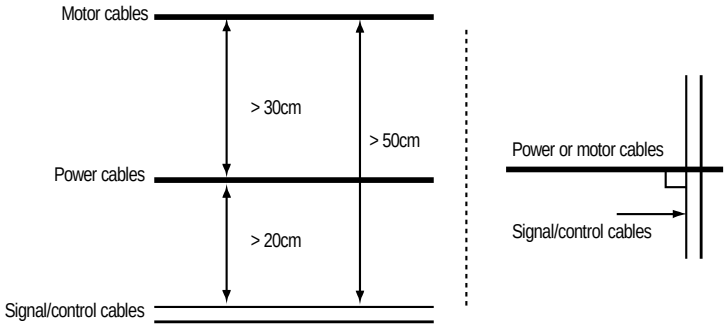


Figure 5-5 System wiring requirement

Shielded/armoured cable: High frequency low impedance shielded cable should be used. For example: copper net, aluminum net or iron net.

Normally, the control cables must use the shielded cables and the shielding metal net must be connected to MONT71 metal enclosure of the drive by cable clamps as shown in Figure 5-6.

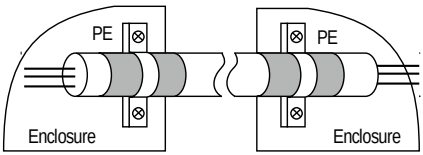


Figure 5-6 Correct connection of the shielded cable

5.7.3 Wiring Motor

Longer the cable between MONT71 and motor is, higher the high-frequency leakage current is, causing MONT71 output current to increase as well. This may affect peripheral devices.

When the cable between motor and MONT71 is longer than 100 meters, it is recommended to install output reactor and adjust the carrier frequency as per the instruction in Table 5-4.

Table 5-4 Carrier frequency and wiring distance between MONT71 and motor

MONT71 and motor	< 30m	30－50m	50－100m	≥ 100m
Carrier frequency	15kHz below	10kHz below	5kHz below	2kHz below

MONT71 should be derated if the motor cables are too long or their cross sectional area (CSA) is too large. MONT71 cables should be the cables with specified CSA (see Table 5-1) because the capacitance of the cable to ground is in proportional to the cable's CSA. If the cable with big CSA is used, its current should be reduced. The current should be decreased by 5% when per level of CSA is increased.

5.7.4 Ground Connection

The MONT71 earth terminals PE must be connected to earth properly. The earthing cable should be as short as possible (the earthing point should be as close to MONT71 as possible) and the earthing area should be as large as possible.

The grounding resistance should be less than 10Ω.

Do not share the earth wire with other devices such as welding machines or power tools. It could share the earthing pole, but motor and MONT71 each have their own earthing pole, then the earthing effect is better. The recommended and avoided earthing methods are respectively shown in Figure 5-7 and Figure 5-8.

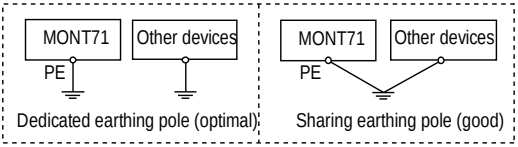


Figure 5-7 Recommended earthing method

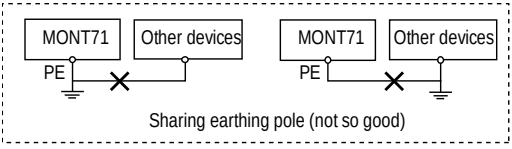


Figure 5-8 Avoided earthing method

When using more than two MONT71, be careful not to loop the earth wire as shown in Figure 5-9.

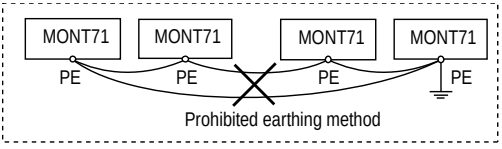


Figure 5-9 Prohibited earthing method

5.7.5 EMI Filter

The EMI filter should be used in the equipment that may generate strong EMI or the equipment that is sensitive to the external EMI. The EMI filter should be a dual-way low pass filter through which lower frequency current can flow while higher frequency current can hardly flow.

Function of EMI filter

1. The EMI filter ensures that the equipment not only can satisfy the conducting emission and conducting sensitivity in EMC standard but also can suppress the radiation of the equipment.

2. It can prevent the EMI generated by equipment from entering the power cable and the EMI generated by power cable from entering equipment.

Common mistakes in using EMI filter

1. Too long the power cable is between the EMI filter and MONT71.

The filter inside the cabinet should be located near to the input power source. The length of filter power cables should be as short as possible.

2. Too close the input and output cables of the EMI filter.

The distance between input and output cables of the filter should be as far apart as possible. Otherwise the high-frequency noise may be coupled between the cables and bypass the filter. Thus, the filter will become ineffective.

3. EMI filter bad earthing.

The EMI filter's enclosure must be earthed properly to the metal case. In order to achieve better earthing effect, make use of a special earthing terminal on the filter's enclosure. If you use one cable to connect the filter to the case, the earthing is useless for high frequency interference. When the frequency is high, so is the impedance of cable, hence there is little bypass effect.

The correct installation: The EMI filter should be mounted on the enclosure of equipment. Ensure to clear away the insulation paint between the filter case and the enclosure for good earthing contact.

5.7.6 Conduction, Radiation and Radio Frequency Interference Countermeasures

MONT71 radiation emission

MONT71 operating theory means that some radiation and emission is unavoidable. MONT71 is usually installed in a metal cabinet which normally little affects the instruments outside the metal cabinet. The cables are the main radiation emission source. If connect the cables according to this manual, the radiation and emission can be suppressed effectively.

If MONT71 and other control equipment are installed in one cabinet, the area rule must be observed. Pay attention to the isolation between different areas, cable layout and shielding.

Reducing conducted interference

Please add a noise filter to suppress conducted interference on the output side. Additionally, conducted interference can be efficiently reduced by threading all the output cables through a grounded metal tube. And conducted interference can be dramatically decreased when the distance between the output cables and the signal cables is above 0.3m.

RF interference clearing

The I/O cables and MONT71 itself will produce radio frequency interference. A noise filter can be installed both on the input side and output side, and shield them with iron utensil to reduce RF interference. The wiring distance between MONT71 and motor should be as short as possible shown in Figure 5-10.

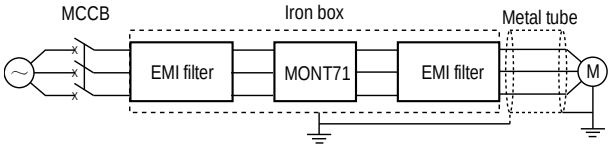


Figure 5-10 RF interference clearing

5.7.7 Input and Output Reactor

AC input reactor

The purpose of installing an AC input reactor is: to increase the input power factor; to dramatically reduce the harmonics on the input side at the high voltage point of common coupling and prevent input current unbalance which can be caused by the phase-to-phase unbalance of the power supply. An AC line reactor which will help to protect the input rectifiers also reduces external line voltage spikes (for example the lightning!).

DC reactor

The installation of a DC reactor can increase the input power factor, improve MONT71 overall efficiency and thermal stability, substantially eliminate the upper harmonics influence on MONT71 performance, and considerably decrease the conducted and radiated electromagnetic emissions from MONT71.

AC output reactor

Generally speaking, when the length of the cable between MONT71 and motor is more than 100m, it will cause leakage current and MONT71 tripping. It suggests that the user should consider installing an AC output reactor.

Chapter 6

Parameters

Function parameter descriptions

There are three function parameter groups:

Group D is monitoring group, which is used to check MONT71 the various states of the configuration parameters and the system.

Group F is the changeable function parameter group.

Group Y is manufacturer parameters, which can not be changed. If the main control board is changed, you should input the manufacturer password. Please contact with agents or our company.

Attributes are changed:

"*": It denotes that the value of this parameter is the actual value which cannot be modified.

"×": It denotes that the parameter cannot be modified in run state.

"○": It denotes that the parameter can be modified in run state.

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
Group D00 Configurations of Integrated Hardware and Software（on page 109—110）					
D00.00	Controller series	0x0000－0xffff LCD display: MONT71 elevator integrated controller	Actual value	*	
D00.01	Controller rated power	0.1－999.9kW	Actual value	*	
D00.02	Controller rated current	0.1－999.9A	Actual value	*	
D00.03	Hardware version of main control board (MCB)	0.00－9.99	Actual value	*	
D00.04	Software version of MCB	0.00－9.99	Actual value	*	
D00.05	Software version of panel	0.00－9.99	Actual value	*	
D00.06	Special software version of MCB	0.00－9.99	Actual value	*	
Group D01 Display Parameters in Drive State（on page 110—111）					
D01.00	S-curve preset speed	0.000－9.999 m/s	Actual value	*	
D01.01	Elevator actual speed	0.000－9.999 m/s	Actual value	*	
D01.02	Running RPM	0－9999rpm	Actual value	*	
D01.03	Output voltage	0－999V	Actual value	*	
D01.04	Output current	0.1－999.9A	Actual value	*	
D01.05	Output frequency	0.01－100.00Hz	Actual value	*	
D01.06	DC bus voltage	0－999V	Actual value	*	
Group D02 Display Parameters of Main Control Board（on page 111—118）					
D02.00	MCB analogue input voltage	0.00－10.00V	Actual value	*	
D02.01	MCB X-terminal input state 1	Display in 16-bit binary and from low to high bit represent: Bit0: X1 terminal Bit1: X2 terminal Bit2: X3 terminal Bit3: X4 terminal Bit4: X5 terminal Bit5: X6 terminal Bit6: X7 terminal Bit7: X8 terminal Bit8: X9 terminal Bit9: X10 terminal Bit10: X11 terminal Bit11: X12 terminal Bit12: X13 terminal Bit13: X14 terminal Bit14: X15 terminal Bit15: X16 terminal	Actual value	*	
D02.02	MCB X-terminal input state 2	Display in 16-bit binary and from low to high bit represent: Bit0: X17 terminal Bit1: X18 terminal	Actual value	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit2: X19 terminal Bit3: X20 terminal Bit4: X21 terminal Bit5: X22 terminal Bit6: X23 terminal Bit7: X24 terminal Bit8: X25 terminal Bit9: X26 terminal Bit10: X27 terminal Bit11—Bit15: Reserved			
D02.03	MCB L-terminal input state 1	Display in 16-bit binary and from low to high bit represent: Bit0: L1 terminal Bit1: L2 terminal Bit2: L3 terminal Bit3: L4 terminal Bit4: L5 terminal Bit5: L6 terminal Bit6: L7 terminal Bit7: L8 terminal Bit8: L9 terminal Bit9: L10 terminal Bit10: L11 terminal Bit11: L12 terminal Bit12: L13 terminal Bit13: L14 terminal Bit14: L15 terminal Bit15: L16 terminal	Actual value	*	
D02.04	MCB L-terminal input state 2	Display in 16-bit binary and from low to high bit represent: Bit0: L17 terminal Bit1: L18 terminal Bit2: L19 terminal Bit3: L20 terminal Bit4: L21 terminal Bit5: L22 terminal Bit6: L23 terminal Bit7: L24 terminal Bit8—Bit15: Reserved	Actual value	*	
D02.05	MCB X-terminal input logic state 1	Display in 16-bit binary and from low to high bit represent: Bit0: Up leveling signal Bit1: Dwon leveling signal Bit2: Door zone signal Bit3: Run output feedback	Actual value	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit4: Brake output feedback Bit5: Brake limit switch feedback Bit6: Synchronous motor self-locked feedback Bit7: Locked-door output feedback Bit8: Inspection input Bit9: Up inspection Bit10: Down inspection Bit11: Firefighting signal Bit12:Reserved Bit13: Locked-elevator Bit14: Up limit Bit15: Down limit			
D02.06	MCB X-terminal input logic state 2	Display in 16-bit binary and from low to high bit represent: Bit0: Up forced Dec. Bit1: Down forced Dec. Bit2: Over-loaded signal Bit3: Full load signal Bit4: Safe circuit 1 Bit5: Front door OD arrival Bit6: Back door OD arrival Bit7: Front door CD arrival Bit8: Back door CD arrival Bit9: Front door light curtain Bit10: Back door light curtain Bit11: Driver signal Bit12: Direct arrival signal Bit13: Commutation signal Bit14: Isolated signal Bit15: Front/back door switch	Actual value	*	
D02.07	MCB X-terminal input logic state 3	Display in 16-bit binary and from low to high bit represent: Bit0: Battery-driven running signal Bit1: Open door button input Bit2: Close door button input Bit3: Safe circuit 2 Bit4: Locked-door circuit 1 Bit5: Locked-door circuit 2 Bit6: Half-load signal Bit7: Fireman signal Bit8: Motor over-heated input signal Bit9: Earthquake monitoring input signal Bit10: Edge input signal of front door Bit11: Edge input signal of back door	Actual value	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit12: Brake forcely feedback input Bit13: Back door prohibits the input signal Bit14: Alarm input signal Bit15: Reserved			
D02.08	MCB X-terminal input logic state 4	Display in 16-bit binary and from low to high bit represent: Bit0: High-voltage safe signal Bit1: High-voltage locked-door signal 1 Bit2: High-voltage locked-door signal 2 Bit3－Bit15: Reserved	Actual value	*	
D02.09	L-terminal for front/back door OD/CD signal	Display in 16-bit binary and from low to high bit represent: Bit0: Front door OD button Bit1: Front door CD button Bit2: Front door OD delay button Bit3: Back door OD button Bit4: Back door CD button Bit5: Back door OD delay button Bit6: Front/back door switch signal Bit7: Back door prohibition Bit8－Bit15: Reserved	Actual value	*	
D02.10	L-terminal for front door internal call state	Display in 16-bit binary and from low to high bit represent: Bit0: 1st floor of front door internal call Bit1: 2nd floor of front door internal call Bit2: 3rd floor of front door internal call Bit3: 4th floor of front door internal call Bit4: 5th floor of front door internal call Bit5: 6th floor of front door internal call Bit6: 7th floor of front door internal call Bit7: 8th floor of front door internal call Bit8: 9th floor of front door internal call Bit9: 10th floor of front door internal call Bit10—Bit15: Reserved	Actual value	*	
D02.11	L-terminal for front door up call state	Display in 16-bit binary and from low to high bit represent: Bit0: 1st floor of front door up call Bit1: 2nd floor of front door up call Bit2: 3rd floor of front door up call Bit3: 4th floor of front door up call Bit4: 5th floor of front door up call Bit5: 6th floor of front door up call Bit6: 7th floor of front door up call Bit7: 8th floor of front door up call Bit8: 9th floor of front door up call	Actual value	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit9—Bit15: Reserved			
D02.12	L-terminal for front door down call state	Display in 16-bit binary and from low to high bit represent: Bit0: Reserved Bit1: 2nd floor of front door down call Bit2: 3rd floor of front door down call Bit3: 4th floor of front door down call Bit4: 5th floor of front door down call Bit5: 6th floor of front door down call Bit6: 7th floor of front door down call Bit7: 8th floor of front door down call Bit8: 9th floor of front door down call Bit9: 10th floor of front door down call Bit10—Bit15: Reserved	Actual value	*	
D02.13	L-terminal for back door internal call state	Display in 16-bit binary and from low to high bit represent: Bit0: 1st floor of back door internal call Bit1: 2nd floor of back door internal call Bit2: 3rd floor of back door internal call Bit3: 4th floor of back door internal call Bit4: 5th floor of back door internal call Bit5: 6th floor of back door internal call Bit6: 7th floor of back door internal call Bit7: 8th floor of back door internal call Bit8: 9th floor of back door internal call Bit9: 10th floor of back door internal call Bit10—Bit15: Reserved	Actual value	*	
D02.14	L-terminal for back door up call state	Display in 16-bit binary and from low to high bit represent: Bit0: 1st floor of back door up call Bit1: 2nd floor of back door up call Bit2: 3rd floor of back door up call Bit3: 4th floor of back door up call Bit4: 5th floor of back door up call Bit5: 6th floor of back door up call Bit6: 7th floor of back door up call Bit7: 8th floor of back door up call Bit8: 9th floor of back door up call Bit9—Bit15: Reserved	Actual value	*	
D02.15	L-terminal for back door down call state	Display in 16-bit binary and from low to high bit represent: Bit0: Reserved Bit1: 2nd floor of back door down call Bit2: 3rd floor of back door down call Bit3: 4th floor of back door down call	Actual value	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit4: 5th floor of back door down call Bit5: 6th floor of back door down call Bit6: 7th floor of back door down call Bit7: 8th floor of back door down call Bit8: 9th floor of back door down call Bit9: 10th floor of back door down call Bit10—Bit15: Reserved			
D02.16	MCB Y-terminal output logic state 1	Display in 16-bit binary and from low to high bit represent: Bit0: Run contactor output Bit1: Brake contactor output Bit2: Synchronous star - delta contactor output Bit3: Brake frocely output Bit4: Fan and light output Bit5: Front door OD output Bit6: Front door CD output Bit7: Back door OD output Bit8: Back door CD output Bit9: Low 7-segment display output a Bit10: Low 7-segment display output b Bit11: Low 7-segment display output c Bit12: Low 7-segment display output d Bit13: Low 7-segment display output e Bit14: Low 7-segment display output f Bit15: Low 7-segment display output g	Actual value	*	
D02.17	MCB Y-terminal output logic state 2	Display in 16-bit binary and from low to high bit represent: Bit0: Up arrow display output Bit1: Down arrow display output Bit2: Minus display output Bit3: Firefighting back to station output Bit4: Buzzer output Bit5: Over-loaded output Bit6: Arrival chime output Bit7: Full load output Bit8: Inspection signal output Bit9: Fan and light output 2 Bit10: Locked-door contactor output Bit11: High bit output of BCD, Gray code, and seven-segment Bit12: Integrated run correctly output Bit13, Bit14: Reserved Bit15: Battery-driven output at power off	Actual value	*	
Group D03 Display Parameters of Floors for Service and Registration（on page 118—119）					

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
D03.00	Present floor	1－F19.00	Actual value	*	
D03.01	Present height	0.00－299.99m	Actual value	*	
D03.02	Distance of lowest floor	0.00－299.99m	Actual value	*	
D03.03	Distance of highest floor	0.00－299.99m	Actual value	*	
D03.04	Registration state of front door 10－1 internal call floor	Display in 10-bit binary and from low to high bit represent: D03.04: front door 10－1 floors with or without registration D03.05: back door 10－1 floors with or without registration • 1: This floor has registration • 0: This floor does not have registration	Actual value	*	
D03.05	Registration state of back door 10－1 internal call floor		Actual value	*	
D03.06	Registration state of front door 9－1 hall call up run	Display in 9-bit binary and from low to high bit represent: D03.06: front door hall call address 9－1 with or without registration D03.07: back door hall call address 9－1 with or without registration • 1: This address of the floor has registration • 0: This address of the floor does not have registration	Actual value	*	
D03.07	Registration state of back door 9－1 hall call up run		Actual value	*	
D03.08	Registration state of front door 10－2 hall call down run	Display in 10-bit binary and from low to high bit represent: D03.08: front door hall call address 10－2 with or without registration D03.09: back door hall call address 10－2 with or without registration • 1: This address of the floor has registration • 0: This address of the floor does not have registration	Actual value	*	
D03.09	Registration state of back door 10－2 hall call down run		Actual value	*	
Group D04 Display Parameters of Elevator Running State（on page 119－120）					
D04.00	Elevator system state	Display in 16-bit binary and from low to high bit represent: Bit0: System front door light curtain Bit1: System back door light curtain Bit2: Hall call locked-elevator Bit3: Hall call firefighting Bit7－Bit4: Elevator state • 0000: Automation • 0001: Inspection • 0010: Battery-driven run • 0011: Shaft self-learning	Actual value	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		• 0100: Firefighting back to base station • 0101: Fireman mode • 0110: Driver mode • 0111: Isolated run • 1000: Auto back to leveling Bit8－Bit11: Reserved Bit12: System full load Bit13: System over load Bit14: System front door edge Bit15: System back door edge			
D04.01	Door machine state	Display in 16-bit binary and from low to high bit represent: Bit2－Bit0: Front door machine state Bit5－Bit3: Back door machine state • 000: Opening • 001: Open door arrival • 010: Closing • 011: Close door arrival • 100: Door machine fault • 101: Door machine stop Bit6－Bit15: Reserved	Actual value	*	
D04.02	High bit of elevator run times	0－65535	Actual value	*	
D04.03	Low bit of elevator run times	0－65535	Actual value	*	
D04.04	Total running time (hour)	0－65535	Actual value	*	
D04.05	Heatsink temperature	0.0－999.9°	Actual value	*	
D04.06	Present fault code	0－100	Actual value	*	
Group D05 Display Parameters of Elevator Hardware（on page 120－121）					
D05.00	C phase AD sample value of Sincos encoder	0－4095	Actual value	*	
D05.01	D phase AD sample value of Sincos encoder	0－4095	Actual value	*	
D05.02	A phase AD sample value of Sincos encoder	0－4095	Actual value	*	
D05.03	B phase AD sample value of Sincos encoder	0－4095	Actual value	*	
D05.04	UVW state of UVW encoder	0－7	Actual value	*	
D05.05	Electrical angle	0－65535	Actual value	*	
D05.06	Leveling switch number	1－2	Actual value	*	
D05.07	Length between leveling switches	0－999mm	Actual value	*	
D05.08	Leveling plate length	0－999mm	Actual value	*	
D05.09	Encoder pulse count	0－65535	Actual value	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
D05.10	Manufacturer debugging parameter, prohibit to change				
D05.11	Buzzer source	0: No action 1: To remind at excessive position deviation returning to base station 2: To remind there is hall call information at driver mode 3: To remind at elevator over-loaded 4: To remind at battery-driven 5: To remind at forced close door 6: To remind at firefighting back to base station 7: To earthquake signal input 8: To remind there is alarm input.	Actual value	*	
D05.12—D05.49 Manufacturer debugging parameter, prohibit to change					
Group D06 Hall Call State Parameters of Modbus Extension（on page 121－122）					
D06.00	Software version of hall call board (HCB)	0.00－9.99	Actual value	*	
D06.01	HCB communication interference evaluation	0.0－100.0 The larger the value is, the greater the communication interference is	Actual value	*	
D06.02	Hall call node communication state 1	Communication state of hall call node 10—1	Actual value	*	
D06.03	Hall call node communication state 2	Communication state of hall call node 34—25	Actual value	*	
Group F00 Basic Parameters（on page 122－124）					
F00.00	Motor type	0: Asynchronous motor 1: Synchronous motor	0	×	
F00.01	Control mode	0: Constant voltage/frequency (VF) control 1: Open-loop vector (SVC) control 2: Encoder closed-loop (VC) control	2	×	
F00.02	Elevator max running speed	0.150m/s－F00.03	0.500m/s	×	
F00.03	Elevator rated speed	0.150－4.000m/s	0.500m/s	×	
F00.04	Elevator rated load	100－50000kg	1000kg	×	
F00.05	Controller max output frequency	5.00－100.00Hz	50.00Hz	×	
F00.06	Traction machine mechanical parameter	10.0－6000.0	20.0	×	
F00.07	Operation mode	0: Panel control 1: Distance control	1	×	
F00.08	Manufacturer debugging parameter, prohibit to change				
F00.09	Speed setting via panel	0.000m/s－F00.02	0.500m/s	○	
F00.10	Elevator run direction	0: The same as run command 1: Opposite to run command	0	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
Group F01 User Parameters（on page 124—127）					
F01.00	User password	00000－65535	00000	○	
F01.01	Menu mode selection	0: Standard menu mode 1: Checking menu mode. (Only different from factory setting parameters can be displayed.) 2: Reserved	0	○	
F01.02	MCB parameter update	0: No operation 1: Restore to factory settings 2: Download the panel parameter group 1 to MCB 3: Clear fault information 4: Download the panel parameter group 2 to MCB 5: Download the panel parameter group 3 to MCB 6: Download the panel parameter group 4 to MCB 7: Download the panel parameter group 5 to MCB 8: Download the panel parameter group 6 to MCB 9: Download the panel parameter group 7 to MCB 10: Download the panel parameter group 8 to MCB 11: Download the panel parameter group 9 to MCB 12: Download the panel parameter group 10 to MCB	0	×	
F01.03	Panel parameter update	0: No operation 1: Upload MCB parameters to panel parameter group 1 2: Upload MCB parameters to panel parameter group 2 3: Upload MCB parameters to panel parameter group 3 4: Upload MCB parameters to panel parameter group 4 5: Upload MCB parameters to panel parameter group 5 6: Upload MCB parameters to panel parameter group 6 7: Upload MCB parameters to panel parameter group 7 8: Upload MCB parameters to panel parameter group 8	0	○	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		9: Upload MCB parameters to panel parameter group 9 10: Upload MCB parameters to panel parameter group 10			
Group F02 Start and Stop Parameters（on page 127—128）					
F02.00	Retention time of start zero-speed	0.000—2.000s	0.200s	×	
F02.01	Delay time of curve run	0.000—2.000s	0.500s	×	
F02.02	Start speed	0.000—0.030m/s	0.000m/s	×	
F02.03	Retention time of start speed	0.000—2.000s	0.000s	×	
F02.04	Brake close delay time at stop	0.000—2.000s	0.200s	×	
F02.05	Zero-speed retention time at stop	0.000—2.000s	0.300s	×	
F02.06	Start ramp time	0.000—2.000s 0.000: No ramp	0.000s	×	
Group F03 Acceleration and Deceleration Curve Parameters（on page 128—130）					
F03.00	Acceleration speed	0.020—2.000m/s^2	0.250m/s^2	×	
F03.01	Start Acc jerk	0.020—2.000m/s^3	0.250m/s^3	×	
F03.02	End Acc jerk	0.020—2.000m/s^3	0.250m/s^3	×	
F03.03	Deceleration speed	0.020—2.000m/s^2	0.250m/s^2	×	
F03.04	Start Dec jerk	0.020—2.000m/s^3	0.250m/s^3	×	
F03.05	End Dec jerk	0.020—2.000m/s^3	0.250m/s^3	×	
F03.06	Inspection Acc speed	0.020—2.000m/s^2	0.250m/s^2	×	
F03.07	Inspection Dec speed	1.000—2.000m/s^2	1.000m/s^2	×	
F03.08	Battery driven Acc speed	0.020—2.000m/s^2	0.250m/s^2	×	
F03.09	Battery driven Dec speed	0.020—2.000m/s^2	1.000m/s^2	×	
F03.10	Asynchronous motor parameter auto-tuning Acc speed	0.020—2.000m/s^2	0.100m/s^2	×	
F03.11	Asynchronous motor parameter auto-tuning Dec speed	0.020—2.000m/s^2	0.100m/s^2	×	
F03.12	Forced Dec speed	0.500—2.000m/s^2	0.500m/s^2	×	
F03.13	Stop Dec jerk	0.002—2.000m/s^3	0.230m/s^3	×	
F03.14	Forced stop Dec jerk	0.002—2.000m/s^3	0.080m/s^3	×	
F03.15—F03.20 Manufacturer debugging parameter, prohibit to change					
Group F04 Speed Parameters（on page 130—132）					
F04.00	Inspection run speed	0.000—0.630m/s	0.200m/s	○	
F04.01	Battery driven run speed	0.020—0.100m/s	0.050m/s	○	
F04.02	The creeping speed at distance control	0.050—0.150m/s	0.100m/s	○	
F04.03	Shaft self-learning speed	0.100—0.300m/s	0.200m/s	×	
F04.04	Re-leveling speed	0.020—0.080m/s	0.040m/s	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F04.05	Advanced open speed	0.020－0.100m/s	0.050m/s	○	
F04.06	Forced Dec speed setting	0.0－105.0%（F00.03）	103.0%	○	
F04.07, F04.08 Manufacturer debugging parameter, prohibit to change					
F04.09	Over-speed setting	80.0－120.0%（F00.03）	115.0%	○	
F04.10	Over-speed detection time	0.1－2.0s	0.3s	○	
F04.11	Detected value of speed deviation	5.0－30.0%（F00.03）	20.0%	×	
F04.12	Detected time of speed deviation	0.1－2.0s	1.0s	×	
Group F05 Weighing Compensation Parameters（on page 132－135）					
F05.00	Pre-torque selection	0: No pre-torque 1: Analogue weighing 2: Reserved 3: Pre-torque auto-compensation	0	×	
F05.01	Analogue weighing selection	0: No analogue weighing 1: Analogue weighing	0	×	
F05.02	Weighing analogue filter time	0.00－2.00s	0.50s	×	
F05.03	Analogue weighing self-learning	0: No self-learning 1: No-load self-learning 2: Other load self-learning	0	×	
F05.04	Car no-load	0.00－10.00V	0.00V	×	
F05.05	Car full load	0.00－10.00V	8.00V	×	
F05.06	Self-learning car load	0－100%	0%	×	
F05.07	Anti-nuisance function	0: No anti-nuisance function 1: In accordance with weighing 2: In accordance with light curtain 3: Both weighing and light curtain	0	×	
F05.08	Pre-torque bias	0.0－100.0%	50.0%	×	
F05.09	Up electrical pre-torque gain	0.000－9.000	1.000	×	
F05.10	Up brake pre-torque gain	0.000－9.000	1.000	×	
F05.11	Down electrical pre-torque gain	0.000－9.000	1.000	×	
F05.12	Down brake pre-torque gain	0.000－9.000	1.000	×	
F05.13－F05.15 Manufacturer debugging parameter, prohibit to change					
F05.16	No weighing current coefficient	0－9999	3000	×	
F05.17	No weighing speed-loop KP	1－9999	1000	○	
F05.18	No weighing speed-loop KI	1－9999	1000	○	
Group F06 Manufacturer Debugging Parameters					
F06.00－F06.05 Manufacturer debugging parameter, prohibit to change					
Group F07 Asynchronous Motor Parameters（on page 135－137）					
F07.00	Asynchronous motor rated power	0.2－500.0kW	Depend on model	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F07.01	Asynchronous motor rated voltage	0－999V		×	
F07.02	Asynchronous motor rated current	0.0－999.9A		×	
F07.03	Asynchronous motor rated frequency	1.00Hz－F00.05	50.00Hz	×	
F07.04	Asynchronous motor rated RPM	1－24000rpm	1440rpm	×	
F07.05	Asynchronous motor power factor	0.001－1.000	0.850	×	
F07.06	Asynchronous motor parameter auto-tuning	0: No action 1: Motor static auto-tuning 2: Motor rotation auto-tuning	0	×	
F07.07	Asynchronous motor stator resistance	0.000－65.535Ω	Depend on model	×	
F07.08	Asynchronous motor rotor resistance	0.000－65.535Ω		×	
F07.09	Asynchronous motor leakage inductance	0.0－6553.5mH		×	
F07.10	Asynchronous motor mutual inductance	0.0－6553.5mH		×	
F07.11	Asynchronous motor no-load current	0.0－999.9A		×	
F07.12	Asynchronous motor of core saturation coefficient 1	0.00－0.50	0.50	×	
F07.13	Asynchronous motor of core saturation coefficient 2	0.00－0.75	0.75	×	
F07.14	Asynchronous motor of core saturation coefficient 3	0.00－1.20	1.20	×	
F07.15	Asynchronous motor torque boost	0.1－30.0%	0.1%	○	
F07.16	Asynchronous motor torque boost end-point	0.0－50.0%（F07.03）	10.0%	○	
F07.17	Asynchronous motor of slip compensation gain	0.0－300.0%	100.0%	○	
F07.18	Asynchronous motor of slip compensation filter time	0.1－10.0s	0.1s	○	
F07.19	Slip compensation limitation	0.0－250.0%	200.0%	×	
F07.20	Asynchronous motor performance optimization	Bit0: Exciting current optimization 0: Normal processing 1: Optimization processing Bit1: Method of exciting current optimization 0: Voltage method 1: Current method	0	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit2－Bit15: Reserved			
F07.21	Asynchronous motor of oscillation-suppression mode	0: Oscillation suppression is dependent on the motor's exciting component 1: Oscillation suppression is dependent on the motor's torque component	1	○	
F07.22	Asynchronous motor of oscillation-suppression coefficient	0－200	100	○	
Group F08 Vector Control Speed-loop Parameters（on page 137－139）					
F08.00	Low speed ASR KP	1－9999	500	○	
F08.01	Low speed ASR KI	1－9999	500	○	
F08.02	High speed ASR KP	1－9999	500	○	
F08.03	High speed ASR KI	1－9999	500	○	
F08.04	ASR PI switching frequency 1	0.00－50.00Hz	10.00Hz	○	
F08.05	ASR PI switching frequency 2	0.00－50.00Hz	15.00Hz	○	
F08.06	ASR integral limitation	0.0－200.0% (motor rated current)	180.0%	○	
F08.07	ASR differential time	0.000－1.000s 0.000: ASR without differential	0.000s	○	
F08.08	ASR output filter time	0.000－1.000s 0.000: ASR output without filter	0.008s	○	
F08.09	Torque limitation	0.0－200.0% (motor rated current)	180.0%	×	
Group F09 Vector Control Current-loop Parameters（on page 139－139）					
F09.00	Current-loop KP	1－4000	500	○	
F09.01	Current-loop KI	1－4000	500	○	
F09.02	Current-loop output filter time	0.000－1.000s 0.000: Current-loop output without filter	0.000s	○	
F09.03－F09.07 Manufacturer debugging parameter, prohibit to change					
Group F10 Synchronous Motor Parameters（on page 139－141）					
F10.00	Synchronous motor type	0: IPM 1: SMPM	0	×	
F10.01	Synchronous motor rated power	0.4－400.0kW	Depend on model	×	
F10.02	Synchronous motor rated voltage	0－999V		×	
F10.03	Synchronous motor rated current	0.0－999.9A		×	
F10.04	Synchronous motor rated frequency	1.00Hz－F00.05	19.20Hz	×	
F10.05	Synchronous motor rated rpm	1－24000rpm	96rpm	×	
F10.06	Synchronous motor stator resistance	0.000－9.999Ω	0.000Ω	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F10.07	Synchronous motor cross axis inductance	0.0－999.9mH	0.0mH	×	
F10.08	Synchronous motor direct axis inductance	0.0－999.9mH	0.0mH	×	
F10.09	Synchronous motor Back EMF	0－999V	0V	×	
F10.10	Synchronous motor of angle auto-tuning	0: No action 1: Static angle auto-tuning 2: Rotation angle auto-tuning	0	×	
F10.11	Synchronous motor static auto-tuning voltage setting	0.0－100.0%（F10.02）	100.0%	×	
F10.12	Synchronous motor initial angle	0.0－359.9°	0.0°	×	
F10.13	Synchronous motor of Z pulse initial angle	0.0－359.9°	0.0°	×	
F10.14	Sincos encoder C amplitude	0－9999	2048	×	
F10.15	Sincos encoder C zero-bias	0－9999	2048	×	
F10.16	Sincos encoder D amplitude	0－9999	2048	×	
F10.17	Sincos encoder D zero-bias	0－9999	2048	×	
F10.18	Sincos encoder CD phase	0: Normal 1: CD phase is opposite	0	×	
F10.19	Synchronous motor current filter coefficients	0－40	0	×	
F10.20	Performance optimization parameters	Bit0: Inspection run parameter auto-tuning 0: Do not automatically parameter tuning 1: Automatically parameter tuning Bit1: Current loop parameters are automatically optimized 0: Manually optimize 1: Automatically optimize Bit2: SINCOS encoder performance optimized 0: Normal processing 1: Optimization processing Bit3: Elevator speed and grid voltage optimization 0: Normal processing 1: Optimization processing Bit4－Bit15: Reserved	0	×	
Group F11 Encoder Parameters（on page 141－142）					
F11.00	Encoder interface card selection	1: ABZ incremental encoder interface card (MT70-PG1-ABZ) 2: UVW encoder interface card	1	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		(MT70-PG3-UVW) 3: SINCOS encoder interface card (MT70-PG2-SINCOS)			
F11.01	Encoder P/R	1－9999	1024	×	
F11.02	Encoder direction setting	0: The same direction 1: The reverse direction	0	×	
F11.03	Encoder signal filter coefficient	00－99 Units: Low speed of filter coefficient Tens: High speed of filter coefficient	11	○	
F11.04	Manufacturer debugging parameter, prohibit to change				
F11.05	Detecting time of encoder wire disconnection	0.00－2.00s 0.00: no detection for encoder wire disconnection	1.00s	×	
Group F12 Main Control Board Terminal Parameters（on page 142－150）					
F12.00	MCB input terminal filter time	2－40ms	10ms	×	
F12.01	Function selection of MCB input terminal X1	Note: Normally open is short for NO 0: No function 1: Up leveling NO input (DZU) 2: Down leveling NO input (DZD) 3: Door zone NO input (SX1) 4: Run output feedback NO input (SW) 5: Brake output feedback NO input (BZK) 6: Brake limit switch feedback NO input (BZK1) 7: Synchronous motor self-locking feedback NO input (FX) 8: Locked door output feedback NO input (FMFB) 9: Inspection NO input (INS). 10: Inspection up NO input (UP) 11: Inspection down NO input (DN) 12: Fire signal NO input (FIRS1) 13: Reserved 14: Locked-elevator NO input (LOCK) 15: Up limit NO input (LSU) 16: Down limit NO input (LSD) 17: Up forced Dec NO input (ULS1) 18: Down forced Dec NO input (DLS1) 19: Over load NO input (LWD). 20: Full load NO input (LWX). 21: Safety circuit 1 NO input (JT1) 22: Front door OD arrival NO input (OLT1) 23: Back door OD arrival NO input (OLT2) 24: Front door CD arrival NO input (CLT1)	3	×	
F12.02	Function selection of MCB input terminal X2		104	×	
F12.03	Function selection of MCB input terminal X3		105	×	
F12.04	Function selection of MCB input terminal X4		109	×	
F12.05	Function selection of MCB input terminal X5		10	×	
F12.06	Function selection of MCB input terminal X6		11	×	
F12.07	Function selection of MCB input terminal X7		12	×	
F12.08	Function selection of MCB input terminal X8		14	×	
F12.09	Function selection of MCB input terminal X9		115	×	
F12.10	Function selection of MCB input terminal X10		116	×	
F12.11	Function selection of MCB input terminal X11		117	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F12.12	Function selection of MCB input terminal X12	25: Back door CD arrival NO input (CLT2) 26: Front door light curtain NO input (EDP1) 27: Back door light curtain NO input (EDP2) 28: Driver signal NO input (ATS) 29: Direct arrival signal NO input (NSB) 30: Commutation signal NO input (ACB) 31: Isolated run signal NO input (ISS) 32: Front/back door switch NO input (GABS) 33: Battery-driven NO input (UPC). 34: OD button NO input (DOB1) 35: CD button NO input (DCB1) 36: Safety circuit 2 NO input (JT2) 37: Door locked circuit 1 NO input (DLC1) 38: Door locked circuit 2 NO input (DLC2) 39: Half-load signal NO input (HALFLOAD) 40: Fireman NO input (FIRS2) 41: Motor over-heated NO input (MT) 42: Earthquake monitoring switch NO input (EQ) 43: Edges feedback for front door NO input (EDK1) 44: Edges feedback for back door NO input (EDK2) 45: Brake forced feedback NO input (KMZ) 46: Back door prohibition NO input 47: Alarm bell NO input 48, 49: Reserved **If hundreds is set as 1, it corresponds to normally close input. For example: if set X1 as 110, it means that inspection input normally close is enabled.**	118	×	
F12.13	Function selection of MCB input terminal X13		119	×	
F12.14	Function selection of MCB input terminal X14		22	×	
F12.15	Function selection of MCB input terminal X15		126	×	
F12.16	Function selection of MCB input terminal X16		28	×	
F12.17	Function selection of MCB input terminal X17		30	×	
F12.18	Function selection of MCB input terminal X18		24	×	
F12.19	Function selection of MCB input terminal X19		0	×	
F12.20	Function selection of MCB input terminal X20		0	×	
F12.21	Function selection of MCB input terminal X21		0	×	
F12.22	Function selection of MCB input terminal X22		0	×	
F12.23	Function selection of MCB input terminal X23		0	×	
F12.24	Function selection of MCB input terminal X24		0	×	
F12.25	Function selection of MCB high voltage input terminal X25	0: No function 1: High voltage safe circuit signal (JT) 2: High voltage locked door 1 signal (DS1) 3: High voltage locked door 2 signal (DS2) 4－99: Reserved	1	×	
F12.26	Function selection of MCB high voltage input terminal X26		2	×	
F12.27	Function selection of MCB high voltage input terminal X27		3	×	
F12.28	Output function selection of MCB relay Y0	0－31 refer to F12.29－F12.51 32: Power failure emergency run is enabled (only for Y0)	0	×	
F12.29	Output function selection of	0: No function	1	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
	MCB relay Y1	1: Run contactor output (SW) 2: Brake contactor output (BZK) 3: Synchronous star-delta contactor output (FX) 4: Brake forced output (KMZ) 5: Lighting and fan output (FAN)			
F12.30	Output function selection of MCB relay Y2		2	×	
F12.31	Output function selection of MCB relay Y3		4	×	
F12.32	Output function selection of MCB relay Y4		0	×	
F12.33	Output function selection of MCB relay Y5		0	×	
F12.34	Output function selection of MCB relay Y6	0: No function 6: Front door open output (OD1) 7: Front door close output (CD1) 8: Back door open output (OD2) 9: Back door close output (CD2) 10: Low 7-segment code display output a 11: Low 7-segment code display output b 12: Low 7-segment code display output c 13: Low 7-segment code display output d 14: Low 7-segment code display output e 15: Low 7-segment code display output f 16: Low 7-segment code display output g 17: Up arrow display output 18: Down arrow display output 19: Minus display output 20: Firefighting back to base station output 21: Buzzer output (BUZ) 22: Over load output (LWD) 23: Arrival chimes output 24: Full load output (LWX) 25: Inspection output 26: Fan and light output 2 (FAN2) 27: Locked door contactor output (FM) 28: High bit output of BCD code, Gray code, and seven-segment code 29: Integrated run correctly output 30: Elevator up run output 31: Elevator down run output	6	×	
F12.35	Output function selection of MCB relay Y7		7	×	
F12.36	Output function selection of MCB relay Y8		8	×	
F12.37	Output function selection of MCB relay Y9		9	×	
F12.38	Output function selection of MCB relay Y10		10	×	
F12.39	Output function selection of MCB relay Y11		11	×	
F12.40	Output function selection of MCB relay Y12		12	×	
F12.41	Output function selection of MCB relay Y13		13	×	
F12.42	Output function selection of MCB relay Y14		0	×	
F12.43	Output function selection of MCB relay Y15		0	×	
F12.44	Output function selection of MCB relay Y16		25	×	
F12.45	Output function selection of MCB relay Y17		17	×	
F12.46	Output function selection of MCB relay Y18		18	×	
F12.47	Output function selection of MCB relay Y19		19	×	
F12.48	Output function selection of MCB relay Y20		20	×	
F12.49	Output function selection of MCB relay Y21		21	×	
F12.50	Output function selection of MCB relay Y22		22	×	
F12.51	Output function selection of		0	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
	MCB relay Y23				
Group F13 Main Control Board L-Terminal Parameters（on page 150—153）					
F13.00	Input filter settings	2—40ms	10ms	○	
F13.01	Function selection of MCB terminal L1	0: No function 201: Front door OD button 202: Front door CD button 203: Front door OD delay button 204: Two doors select button input 205: Back door prohibited switch normally open input 301: Back door OD button 302: Back door CD button 303: Back door OD delay button 210: 10th floor of front door internal call 211: 1st floor of front door internal call 212: 2nd floor of front door internal call 213: 3rd floor of front door internal call 214: 4th floor of front door internal call 215: 5th floor of front door internal call 216: 6th floor of front door internal call 217: 7th floor of front door internal call 218: 8th floor of front door internal call 219: 9th floor of front door internal call 310: 10th floor of back door internal call 311: 1st floor of back door internal call 312: 2nd floor of back door internal call 313: 3rd floor of back door internal call 314: 4th floor of back door internal call 315: 5th floor of back door internal call 316: 6th floor of back door internal call 317: 7th floor of back door internal call 318: 8th floor of back door internal call 319: 9th floor of back door internal call 221: 1st floor of front door up call 222: 2nd floor of front door up call 223: 3rd floor of front door up call 224: 4th floor of front door up call 225: 5th floor of front door up call	201	×	
F13.02	Function selection of MCB terminal L2		202	×	
F13.03	Function selection of MCB terminal L3		203	×	
F13.04	Function selection of MCB terminal L4		0	×	
F13.05	Function selection of MCB terminal L5		211	×	
F13.06	Function selection of MCB terminal L6		212	×	
F13.07	Function selection of MCB terminal L7		213	×	
F13.08	Function selection of MCB terminal L8		214	×	
F13.09	Function selection of MCB terminal L9		215	×	
F13.10	Function selection of MCB terminal L10		0	×	
F13.11	Function selection of MCB terminal L11		0	×	
F13.12	Function selection of MCB terminal L12		0	×	
F13.13	Function selection of MCB terminal L13		221	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F13.14	Function selection of MCB terminal L14	226: 6th floor of front door up call 227: 7th floor of front door up call 228: 8th floor of front door up call 229: 9th floor of front door up call 321: 1st floor of back door up call 322: 2nd floor of back door up call 323: 3rd floor of back door up call 324: 4th floor of back door up call 325: 5th floor of back door up call 326: 6th floor of back door up call 327: 7th floor of back door up call 328: 8th floor of back door up call 329: 9th floor of back door up call 230: 10th floor of front door down call 232: 2nd floor of front door down call 233: 3rd floor of front door down call 234: 4th floor of front door down call 235: 5th floor of front door down call 236: 6th floor of front door down call 237: 7th floor of front door down call 238: 8th floor of front door down call 239: 9th floor of front door down call 330: 10th floor of back door down call 332: 2nd floor of back door down call 333: 3rd floor of back door down call 334: 4th floor of back door down call 335: 5th floor of back door down call 336: 6th floor of back door down call 337: 7th floor of back door down call 338: 8th floor of back door down call 339: 9th floor of back door down call	222	×	
F13.15	Function selection of MCB terminal L15		223	×	
F13.16	Function selection of MCB terminal L16		224	×	
F13.17	Function selection of MCB terminal L17		232	×	
F13.18	Function selection of MCB terminal L18		233	×	
F13.19	Function selection of MCB terminal L19		234	×	
F13.20	Function selection of MCB terminal L20		235	×	
F13.21	Function selection of MCB terminal L21		0	×	
F13.22	Function selection of MCB terminal L22		0	×	
F13.23	Function selection of MCB terminal L23		0	×	
F13.24	Function selection of MCB terminal L24		0	×	
F13.25－F13.26 Manufacturer debugging parameter, prohibit to change					
F13.27	Output logic setting 1	0－65535	0	×	
F13.28	Output logic setting 2	0－255	0	×	
Group F14 Communication Parameters（on page 153－154）					
F14.00	Data format	0: 1-8-2 format, no parity, RTU 1: 1-8-1 format, even parity, RTU 2: 1-8-1 format, odd parity, RTU 3: 1-7-2 format, no parity, ASCII 4: 1-7-1 format, even parity, ASCII 5: 1-7-1 format, odd parity, ASCII	0	×	
F14.01	Baud rate selection	0: 1200bps	3	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps			
F14.02	Local address	0－247	2	×	
F14.03	Host PC response time	0－1000ms	0ms	×	
F14.04－F14.10 Manufacturer debugging parameter, prohibit to change					
Group F15 Panel Display Parameters（on page 154－155）					
F15.00	LCD panel language	0: Chinese 1: English	0	○	
F15.01	LCD panel display contrast	1－8	6	○	
F15.02	Small panel display direction	0: Positive display, physical floor 1: Reverse display, physical floor 2: Positive display, hall call data 3: Reverse display, hall call data	0	○	
F15.03	Run display parameter 1 setting	0: Reserved 1: Preset speed 2: Feedback speed 3: Output frequency 4: Running RPM 5: Output voltage 6: Output current 7: DC bus voltage 8: AI input voltage 9: Present height	2	○	
F15.04	Run display parameter 2 setting		3	○	
F15.05	Run display parameter 3 setting		6	○	
F15.06	Run display parameter 4 setting		0	○	
F15.07	Run display parameter 5 setting		0	○	
F15.08	Run display parameter 6 setting		0	○	
F15.09	Stop display parameter 1 setting		2	○	
F15.10	Stop display parameter 2 setting		0	○	
F15.11	Stop display parameter 3 setting		7	○	
F15.12	Stop display parameter 4 setting		0	○	
F15.13	Stop display parameter 5 setting		0	○	
F15.14	Stop display parameter 6 setting		0	○	
Group F16 Enhance Function Parameters（on page 155－157）					
F16.00	Current keep time after stop command	0－1500ms	300ms	×	
F16.01	Fan control mode	0: Auto stop 1: Immediately stop 2: Always run when power on	0	○	
F16.02	Fan control keep time	0.0－600.0s	300.0s	○	
F16.03	Braking unit action voltage	220V: 360－400V	380V	×	
		380V: 630－750V	720V		
F16.04	Contactor fault detect time	0.3－2.0s	1.0s	×	
F16.05	Fault shield	Bit0: E0038 and E0039 fault shield 0: No shield for E0038 and E0039 1: Shield for E0038 and E0039	0	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit1: E0024 fault shield 0: No shield for E0024 1: Shield for E0024 Bit2: E0058 fault shield 0: No shield for E0058 1: Shield for E0058 Bit3: E0059 fault shield 0: No shield for E0059 1: Shield for E0059 Bit4: E0045 fault shield 0: No shield for E0045 1: Shield for E0045 Bit5－Bit15: Reserved			
F16.06	Manufacturer debugging parameter, prohibit to change				
F16.07	Elevator manufacturers choose	0－999	0	×	
F16.08	Kinds of elevator parameter selection	0－99	0	×	
F16.09－F16.24	Manufacturer debugging parameter, prohibit to change				
Group F17 Fault Protect Parameters（on page 157－160）					
F17.00	The detect base of lack of input	0－100% (controller rated voltage)	30%	×	
F17.01	The detect time of lack of input	0.0－5.0s	1.0s	×	
F17.02	The detect base of lack of output	0－100% (controller rated current)	20%	×	
F17.03	The detect time of lack of output	0.0－20.0s	3.0s	×	
F17.04	Motor overload protect factor	20.0－110.0%	100.0%	×	
F17.05	Fault auto reset times	0－100 0: No reset function	0	×	
F17.06	Fault auto reset interval	2.0－20.0s/times	5.0s/times	×	
F17.07	Fault relay action select	Bit0: During auto reset: 0: No action 1: Action Bit1: During under voltage 0: No action 1: Action Bit2－Bit3: Reserved	00	○	
F17.08	No. 1 fault type (the farthest time)	E0001: Controller output Acc overcurrent E0002: Controller output Dec overcurrent E0003: Controller output constant speed overcurrent E0004: DC bus voltage Acc overvoltage E0005: DC bus voltage Dec overvoltage E0006: DC bus voltage constant speed overvoltage E0007: Reserved	0	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F17.08	No. 1 fault type (the farthest time)	E0008: Power module faulty E0009: Heatsink overheated E0010: Braking unit faulty E0011: CPU fault E0012: Parameter auto-tuning fault E0013: Soft start failed E0014: Current detect faulty E0015: Lack of input E0016: Lack of output E0017: Controller overloaded E0018: Excessive speed deviation E0019: Motor overloaded E0020: Motor overheated E0021: MCB EEPROM faulty E0022: Panel EEPROM faulty (only display but without controller protection) E0023: Parameter setting faulty E0024: Input voltage detection failure E0025－E0029: Reserved E0030: Encoder reverse direction E0031: Encoder disconnection E0032: Motor over speed E0033: Loss of Z signal of ABZ encoder E0034: UVW signal wrong of UVW encoder E0035: CD phase wrong of Sincos encoder E0036: Shortest distance ultrahigh E0037: Control board logic parameters E0038: Up forced Dec switch disconnection E0039: Down forced Dec switch disconnection E0040: Elevator run timeout E0041: Safety circuit disconnection E0042: Door locked disconnection during running E0043: Up limit signal disconnection during running E0044: Down limit signal disconnection during running E0045: Up/down forced Dec switch disconnection E0046: Re-leveling abnormal E0047: Lock-door contactor adhesion E0048: OD fault	0	*	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F17.08	No. 1 fault type (the farthest time)	E0049: CD fault E0050: Shaft self-learning fault E0051: Reserved E0052: Hall call communication fault E0053: Lock-door short-circuit fault E0054: Synchronous motor star-delta contactor feedback abnormal E0055: Changed floor park fault E0056: Run contactor feedback abnormal E0057: Brake contactor feedback abnormal E0058: Leveling signal abnormal E0059: Receive OD and CD arrival signals at the same time E0060: Forced Dec distance is too short E0061: Reserved E0062: Inspection run overcurrent E0063: Advanced open door abnormal	0	*	
F17.09	No. 2 fault type	0－1099	0	*	
F17.10	No. 3 fault type		0	*	
F17.11	No. 4 fault type		0	*	
F17.12	No. 5 fault type		0	*	
F17.13	No. 6 fault type		0	*	
F17.14	No. 7 fault type		0	*	
F17.15	No. 8 fault type		0	*	
F17.16	No. 9 fault type		0	*	
F17.17	No. 10 fault type		0	*	
F17.18	The most recent fault type	0－1099	0	*	
F17.19	The most recent running speed at faulty	0.000－4.000m/s	0.000m/s	*	
F17.20	The most recent DC bus voltage at faulty	0－999V	0V	*	
F17.21	The most recent output current at faulty	0.0－999.9A	0.0A	*	
Group F18 PWM Control Parameters（on page 160－161）					
F18.00	Carrier frequency	1－16kHz	Depend on model	×	
F18.01	Carrier frequency auto adjust enable	0: Disable 1: Enable	0	×	
F18.02	PWM over-modulation enable	0: Disable 1: Enable	1	×	
F18.03	PWM modulation mode	0: Two phase / Three phase switch 1: Three phase	1	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
Group F19 Distance Control Parameters（on page 161—163）					
F19.00	Total floor	2—10	5	×	
F19.01	Present floor	1—F19.00	1	×	
F19.02	Present height	0.00—299.99m	0.00m	×	
F19.03	Leveling distance adjustment/ Parking allowance of distance control	0—60mm F19.06 = 0, F19.03 is leveling distance adjustment F19.06 = 1, F19.03 is parking allowance of distance control	30mm	×	
F19.04	Leveling position correction coefficient	0—500mm	0mm	×	
F19.05	Dec point through output adjustment	0.050—2.000s	0.250s	×	
F19.06	Direct parking selection	0: Direct parking mode 0 (without creep) 1: Direct parking mode 1 (with creep)	0	*	
F19.07	Highest speed of curve 1	0.000m/s—F00.02	0.000m/s	×	
F19.08	Highest speed of curve 2		0.000m/s	×	
F19.09	Highest speed of curve 3		0.000m/s	×	
F19.10	Highest speed of curve 4		0.000m/s	×	
F19.11	Highest speed of curve 5		0.000m/s	×	
F19.12	Up forced Dec position	0.00—300.00m	0.00m	×	
F19.13	Down forced Dec position	0.00—300.00m	0.00m	×	
F19.14—F19.17 Manufacturer debugging parameter, prohibit to change					
Group F20 Storey Height Parameters（on page 163—165）					
F20.00	High bit of storey 1	0—50000 Storey N high bit number xx = 2N – 2 Storey N low bit number xx = 2N – 1 **Storey height =** **50000 ×storey high bit + storey low bit**	0	×	
F20.01	Low bit of storey 1		0	×	
F20.02	High bit of storey 2		0	×	
F20.03	Low bit of storey 2		0	×	
F20.xx	High bit of storey N		0	×	
F20.xx	Low bit of storey N		0	×	
F20.14	High bit of storey 8		0	×	
F20.15	Low bit of storey 8		0	×	
F20.16	High bit of storey 9		0	×	
F20.17	Low bit of storey 9		0	×	
Group F21 Elevator Parameters（on page 165—166）					
F21.00	Parking base station	1—F19.00	1	×	
F21.01	Fire base station	1—F19.00	1	×	
F21.02	Locked-elevator base station	1—F19.00	1	×	
F21.03	Service floor	0—1023	1023	×	
Group F22 Door Machine Parameters（on page 166—168）					
F22.00	Door machine number	1—2	1	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F22.01	Front door service floor	0－1023 (set 10－1 floor)	1023	○	
F22.02	Back door service floor	0－1023 (set 10－1 floor)	1023	○	
F22.03	OD time protection	5－99s	10s	○	
F22.04	CD time protection	5－99s	15s	○	
F22.05	Limited times of OD/CD overtime	0－20	0	○	
F22.06	OD/CD torque holding	0: Without OD/CD torque holding 1: With OD torque holding 2: With CD torque holding 3: With OD/CD torque holding 4: Run process with CD torque holding	3	○	
F22.07	Hall call OD holding time	1－30s	5s	○	
F22.08	Internal call OD holding time	1－30s	3s	○	
F22.09	Door state at waiting elevator	0: Normal close the door 1: Base station OD waiting elevator 2: Each floor OD waiting elevator	0	○	
F22.10	Holding time for base station OD	1－30s	10s	○	
F22.11	Delay time of OD holding	10－1000s	30s	○	
F22.12	Manufacturer debugging parameter, prohibit to change				
F22.13	Open-through door control mode	0: Open-through door control mode 0 1: Open-through door control mode 1 2: Open-through door control mode 2 3: Open-through door control mode 3	0	○	
Group F23 Time Parameters（on page 168－169）					
F23.00	Free return base station time	0－240min	10min	○	
F23.01	Delay time of close lighting and fan	0－240min 0: No close delay function	2min	○	
F23.02	Largest floors run interval	0－45s	45s	×	
Group F24 Display Parameters of Floor Information（on page 169－170）					
F24.00	Collective mode	0: Full collective 1: Up collective 2: Down collective	0	○	
F24.01	Floor 1 display	0000－1999 • The high 2-bit respents the floor's tens • The low 2-bit respents the floor's units **Such as:** The 10th floor displays 10, F24.10 = 0100; The first floor displays -1, F24.01=1001. 00: Display "0" 01: Display "1" 02: Display "2"	1901	○	
F24.02	Floor 2 display		1902	○	
F24.03	Floor 3 display		1903	○	
F24.04	Floor 4 display		1904	○	
F24.05	Floor 5 display		1905	○	
F24.06	Floor 6 display		1906	○	
F24.07	Floor 7 display		1907	○	
F24.08	Floor 8 display		1908	○	
F24.09	Floor 9 display		1909	○	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F24.10	Floor 10 display	03: Display “3” 04: Display “4” 05: Display “5” 06: Display “6” 07: Display “7” 08: Display “8” 09: Display “9” 10: Display “-” 11－99: No display	0100	○	
F24.11	Hall call output selection	0: Seven-segment code 1: BCD code 2: Reserved 3: Binary code	1	○	
Group F25 Test Running Parameters（on page 170－171）					
F25.00	Test floor 1	0－F19.00	0	○	
F25.01	Test floor 2		0	○	
F25.02	Test floor 3		0	○	
F25.03	Test times	0－60000	0	○	
F25.04	Special test parameter	Bit0: Hall call enable 0: Enabled hall call 1: Disabled hall call Bit1: OD enable 0: Enabled OD 1: Disabled OD Bit2: Over-load enable 0: Disabled over-load 1: Enabled over-load Bit3: Limitation enable 0: Enabled limitation 1: Disabled limitation Bit4: Random run enable 0: Disabled random run 1: Enabled random run Bit5－Bit15: Reserved	0	○	
Group F26 Elevator Function Selections（n page 171－179）					
F26.00	Call elevator floor setting	0－F19.00	0	○	
F26.01	Shaft self-learning	0: Does not work 1: Start shaft self-learning	0	×	
F26.02	Driver function	Bit0: Open driver function 0: Without driver function	3	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		1: With driver function Bit2－Bit1: Hall call disposal at driver mode 00: Buzzer no action, and internal call is not flashing 01: Buzzer no action, internal call is flashing 10: Buzzer action, and internal call is not flashing 11: Buzzer action, internal call is flashing Bit3: CD arrival without registration command and auto open door 0: Auto open door 1: Do not auto open door Bit4－Bit6: Reserved Bit7: Closed door mode selection 0: Long press the CD button to close the door 1: Jog to close the door			
F26.03	Firefighting function	0: Without firefighting function 1: With firefighting function	1	×	
F26.04	Re-leveling function	0: Without re-leveling function 1: With re-leveling function	0	×	
F26.05	Advanced open function	0: Without advanced open function 1: With advanced open function	0	×	
F26.06	Hall call Modbus communication	0: No open 1: Open	0	×	
F26.07	Isolated run		0	×	
F26.08	Locked-elevator BCD code hall call display	Bit0: To set the SegA output 0: No SegA output. 1: SegA output. Bit1: To set the SegB output 0: No SegB output. 1: SegB output. Bit2: To set the SegC output 0: No SegC output. 1: SegC output. Bit3: To set the SegD output 0: No SegD output. 1: SegD output.	0	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit4－Bit7: Reserved.			
F26.09, F26.10 Manufacturer debugging parameter, prohibit to change					
F26.11	Miss delete car command	0: No open 1: Open	1	×	
F26.12	Inspection parameter setting	Bit0: Inspection auto close door 0: Inspection without close door 1: Inspection auto close door Bit1: Inspection over-current detection 0: Inspection run without limiting 110% rated current 1: Inspection run with limiting 110% rated current Bit2: Stop mode selection at inspection 0: Immediate stop 1: Dec stop Bit3: Detect door lock jump-out fault at inspection mode 0: Detect door lock jump-out fault 1: Do not detect door lock jump-out fault Bit4: Detect up/down forced simultaneous operation at inspection mode 0: Detect 1: Do not detect Bit5: Detect open/close door simultaneous operation at inspection mode 0: Detect 1: Do not detect Bit6: Door machine non-service floor allow open/close door at inspection 0: Do not allow open/close door 1: Allow open/close door Bit7: Detect the door machine CD arrival at inspection running 0: Do not detect close door arrival 1: Detect close door arrival	5	×	
F26.13	Forced close door	0: No open 1: Open	0	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F26.14	Door lock jump-out test	Bit0: Door-lock jump-out test function 0: No open 1: Open Bit1: Door-lock jump-out test mode 0: Test total door lock circuits together 1: Test each door lock circuit independently Bit2－Bit15: Reserved	1	×	
F26.15	Battery-driven run parameter setting	Bit0: Battery-driven self-rescue timeout protection 0: Protection 1: No protection Bit1: Permanent magnet synchronous motor battery-driven auto-running 0: No open 1: Open Bit2: Battery-driven direction judgment 0: Auto judge 1: Judge in accordance to weighing signal Bit3: Fixed up run of battery-driven direction 0: This bit should not decide the direction 1: The direction is fixed up run. Bit4: Fixed down run of battery-driven direction 0: This bit should not decide the direction 1: The direction is fixed down run. Bit5－Bit7: Reserved	1	×	
F26.16	Elevator enhanced function selection	Bit0: Stop without run command and auto open door 0: Do not auto open door 1: Auto open door Bit1: Reserved Bit2: Battery driven reset auto return to base station 0: Auto return to base station 1: Do not return to base station Bit3: Cleared conditions of firefighting back to base station mode	1	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F26.16	Elevator enhanced function selection	0: Power off or firefighting switch is invalid 1: Fireman input valid and then clear Bit4: Non-service floor is allowed to open door at fireman operating elevator Bit5: Non-service floor is allowed to open the door at fireman operating door machine 0: Not allow to open door 1: Allow to open door Bit6: OD selection at firefighting back to base station power-on 0: Open door 1: No open door Bit7: E0041 clear the internal call 0: E0041 fault clear the internal call 1: E0041fault do not clear the internal call Bit8: Forced Dec switch types 0: Ordinary forced deceleration switch 1: Trigger forced deceleration switch Bit9: Open the function of pulling door manually 0: Do not open this function 1: Open this function Bit10: Selections of up/down limit switch 0: Use the actual up/down limit switch 1: Use the synthesis of leveling floor and end station switch Bit11: Back to leveling automatically 0: Back to leveling automatically due to meeting the running condition 1: Back to leveling for the setting run command Bit12: Car energy-saving selections at OD waiting for elevator 0: Car is not energy-saving 1: Car is energy-saving	1	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
F26.16	Elevator enhanced function selection	Bit13: Display the running direction sparkly 0: Do not display 1: Display Bit14: Logic of fan and lighting 0: The logic is normal 1: The logic is negated Bit15: Light curtain action modes of door 1 and door 2 0: Light curtains of Door 1and door 2 act alone 1: Light curtains have inside association	1	×	
F26.17	Contactor contact adhesion failure auto reset	0: No open 1: Open	0	×	
F26.18	Forced Dec switch adhesion detection		1	×	
F26.19	Synchronous motor star-delta contactor parameter setting	Bit0: Synchronous star-delta contactor control selection 0: Not control the output 1: Control the output Bit1: Synchronous star-delta contactor normally open or close setting 0: Normally close. Generally use the normally close 1: Normally open Bit2－Bit7: Reserved	0	×	
F26.20	Manufacturer debugging parameter, prohibit to change				
F26.21	Open-through door control	0: No open 1: Open	0	×	
F26.22	OD function selection at this floor internal call	0: No open door 1: Open door	0	×	
F26.23	OD function of OD delay button	0: Pressing the OD delay button does not work during CD process 1: Pressing the OD delay button does work during CD process	0	×	
F26.24	Position deviation too large and return to run	0: Does not return to base station 1: Return to base station	1	×	
F26.25	Position deviation too large and base setting	180－700mm	400mm	×	
F26.26	Elevator increased function 2	Bit0: Close the door via CD button due to no OD arrival	0	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		0: The CD button cannot close the door 1: The CD button can close the door Bit1: Detect the timeout of auto back to re-leveling 0: Detect 1: Do not detect Bit2: Safety circuit fault priority 0: Normal safety circuit fault level 1: High safety circuit fault level Bit3－Bit15: Reserved			
F26.27, F26.28 Manufacturer debugging parameter, prohibit to change					
F26.29	Emergency return leveling and stop delay	0.000－3.000s	0.100s	×	
F26.30	Return leveling and stop delay	0.000－3.000s	0.100s	×	
F26.31	Hall call parameter setting	Bit0: The way of digital arrow display 0: Scrolled 1: Fixed Bit1: Format of arrow display 0: Big arrow 1: Small arrow Bit2: Direction button input type Bit3: Firefighting signal input type Bit4: Locked-elevator signal input type 0: Normally open 1: Normally close Bit5: Floor display 0: Dynamic 1: Direct Bit6: Single digit display 0: Center display 1: Unilateral display Bit7: Energy-saving display selection 0: Enabled energy-saving display 1: Disabled energy-saving display Bit9－Bit8: LCD bright adjustment 00: Low bright 01: Middle bright 10: High bright 11: The brightest	512	×	

Function Para.	Parameter Name	Setting Range	Default	Attr.	Value
		Bit10: HCB display fault code 0: No display 1: Display Bit11－Bit15: Reserved			
F26.32	Hall call parameter setting confirm	0: No action 1: Hall call parameter setting confirm	0	×	
F26.33	Hall call HCB-H indicator 1 meaning	0: No function 1: Full load indication 2: Inspection indication 3: Stop indication 4: Over load indication 5: Fault indication	1	×	
F26.34	Hall call HCB-H indicator 2 meaning		2	×	
F26.35, F26.36 Manufacturer debugging parameter, prohibit to change					
Group F27 Elevator Adjustment Enhanced Function Parameters（on page 179－179）					
F27.00－F27.59 Manufacturer debugging parameter, prohibit to change					

Chapter 7

Panel Introduction

MONT71 series have optional LCD panel (MT70-LCD-A), as Figure 7-1, and the key descriptions are shown as Table 7-1.

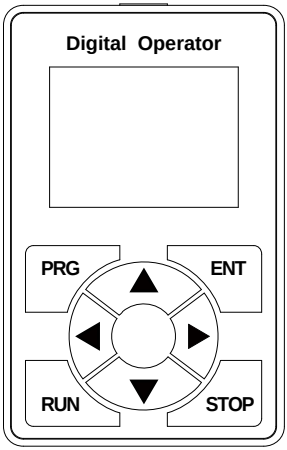


Figure 7-1 MONT71 panel

Table 7-1 Panel's key description

Key	Name	Function
PRG	Program/exit key	Entry or exit programming key
ENT	Enter/confirm key	Enter lower menu or confirm to save the data
RUN	Run key	At panel control (F00.07 = 0), to start MONT71; At distance control (F00.07 = 1), equivalent to the open door (OD) button
STOP	Stop/reset key	At panel control (F00.07 = 0), to stop MONT71; At distance control (F00.07 = 1), equivalent to the close door (CD) button; At detecting fault and fault floor, to be as fault reset key
▲	Increment key	Increment of data or function parameter number
▼	Decrement key	Decrement of data or function parameter number
◀	Left direction key	Select the data modification bit or switch the display status parameters
▶	Right direction key	Select the data modification bit

7.1 Panel Display Interface

7.1.1 Power-up Display Interface

At power–up, the panel display interface is shown as Figure 7-2, and the second display interface is MONT71 actual configuration parameters.

After the panel displays “power-up display interface”, if MONT71 does not have the user password, it will display “state display interface”; if have user password, display “input password display interface”.

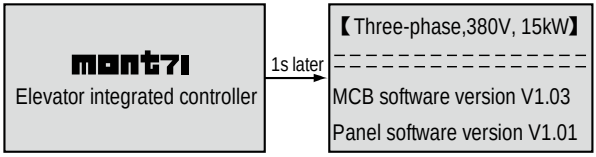


Figure 7-2 Panel power-up display interface

7.1.2 Input Password Display Interface

If MONT71 has been set parameter password to protect, only inputting the correct password you can operate the panel.

When MONT71 is power-up or there is no press on the panel for 5 minutes, the panel will display “input password display interface”, shown as Figure 7-3.

If you want to clear, modify or set the user password, you can refer to section 7.3.2.

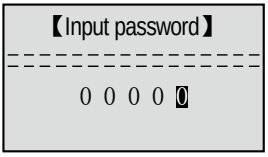


Figure 7-3 Input password display interface

Note:

If MONT71 does not have password protection, it will not display “input password display interface” at power-up.

7.1.3 Fault Display Interface

When MONT71 fault occurs, the panel will automatically alternate display “fault display interface”, shown as Figure 7-4.

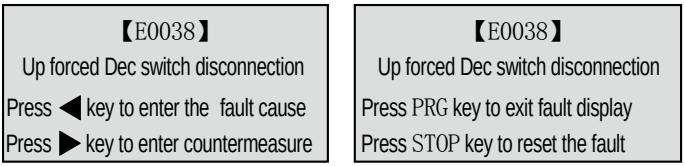

【E0038】
Up forced Dec switch disconnection
Press ◀ key to enter the fault cause
Press ▶ key to enter countermeasure
【E0038】
Up forced Dec switch disconnection
Press PRG key to exit fault display
Press STOP key to reset the fault

Figure 7-4 Display interface at fault

Display the fault countermeasures or the fault causes as Figure 7-5, this time, press **PRG** to return to fault display interface.

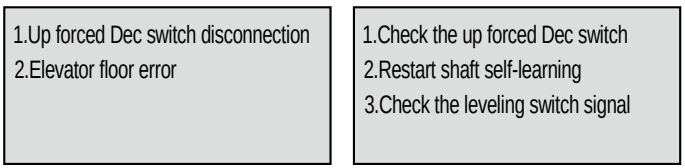

1.Up forced Dec switch disconnection
2.Elevator floor error
1.Check the up forced Dec switch
2.Restart shaft self-learning
3.Check the leveling switch signal

Figure 7-5 Display the fault countermeasures and reasons

7.1.4 State Display Interface

The state display interface is shown as Figure 7-6, refer to Table 7-2 for details.

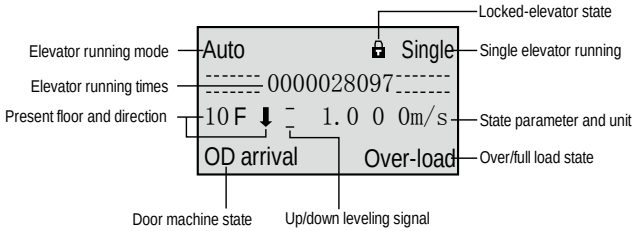


Figure 7-6 State display interface

Table 7-2 Specific content of state display interface

Display content	Specific display
Elevator running mode	Display "auto, inspection, fire back to base station, fireman, driver, auto back to leveling floor, battry-driven, isolated" running mode etc. If there is fault, alternately display "fault code" and "elevator running mode"
Locked-elevator state	At the locked-elevator state, display the mark, otherwise no display
Elevator running times	Display the present elevator running times
Present floor and direction	Display the present elevator floor and running direction. Scrolling the directional arrow shows that the elevator is running, and stilling show that the elevator did not start to run
Up/down leveling signal	When the up leveling signal is valid, it displays ; when the down leveling signal is valid, it displays ; When up and down signals are valid, it displays
State parameter and unit	Include running state parameter (F15.03－F15.08) and stopping state parameter (F15.09－F15.14). Pressing key or key can cyclically display different state parameters
Door machine state	Display "opening door, OD arrival, door lock disconnection, closing door, CD arrival, door machine fault, door lock connection and door machine stop" etc. When there are front door and back door, the display will include "front door" or "back door", such as "front door is opening". There is no difference between the door lock connection of front door and back door
Over-load/full-load state	If elevator is over-load, display "over load"; if full-load, display "full load"

7.2 Four-level Menu Description

The four level menus are: mode setting level, function group setting level, function parameter setting level, setting parameter level. The specific four-level operation is shown as Figure 7-7, and key description on each level menu is shown as Table 7-3.

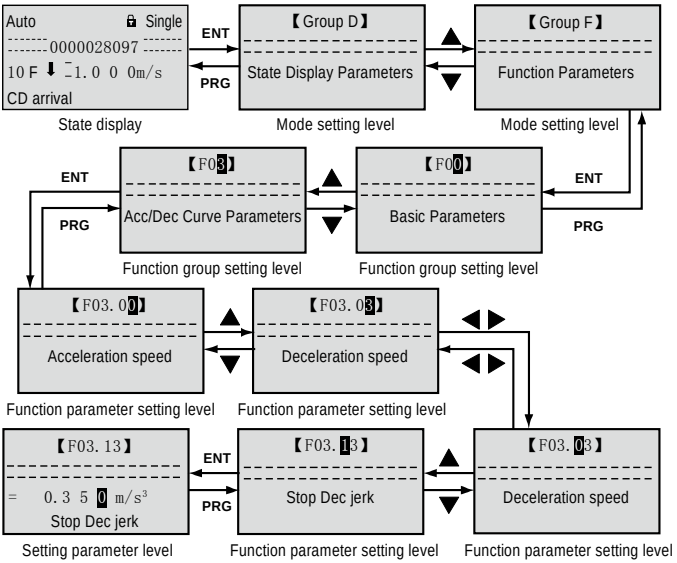


Figure 7-7 Four-level menu operation flowchart

Table 7-3 Key description on each level menu

Key	Mode setting level	Function group setting level	Function para. setting level	Setting parameter level
PRG	Return to state display	Return to mode setting level	Return to function group setting level	No save present value and return to function parameter setting level
ENT	Enter to function group setting level	Enter to function para. setting level	Enter to setting parameter level	Save present value and return to function para. setting level
▲	Select function group. Cycle according to D-F-Y	Modify function group. Increase 1 when press the key once	Modify function parameter. Increase 1 based on present modifiable bit	Modify parameter value. Increase 1 based on present modifiable bit
▼	Select function group. Cycle according to Y-F-D	Modify function group. Decrease by 1 when press the key once	Modify function para. Decrease 1 based on present modifiable bit	Modify parameter value. Decrease 1 based on present modified bit
◀	Invalid	Invalid	Switch units and tens	Cyclically switch parameter modifiable bit, long press can quickly switch
▶	Invalid	Invalid	Switch tens and units	Cyclically switch parameter modifiable bit, long press can quickly switch

7.3 Examples of Panel Use

7.3.1 Set Function Parameter

Modify the setting value of function parameter F00.09 from 1.500m/s to 1.000m/s for example, shown as Figure 7-8.

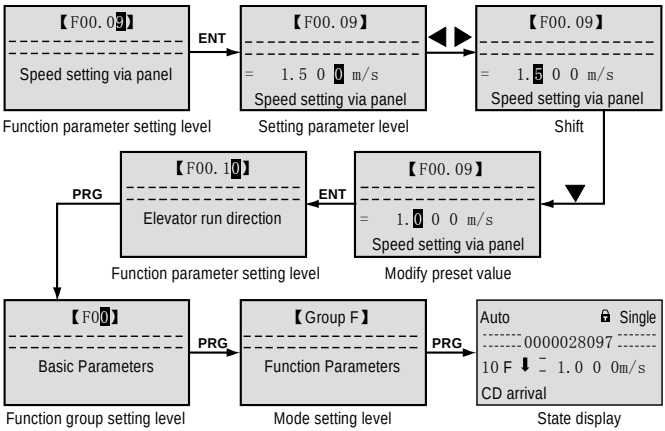


Figure 7-8 Function parameter setting flowchart

In the setting level, if the parameter is not in anti-color displaying, it indicates that this parameter can't be modified. The possible reasons are as follows:

- The function parameter can't be modified, such as the actual detected parameters or recorded parameters etc.
- It can not modify the function parameter in the running state. Only when MONT71 stops can it modify the function parameter.
- **Group F00, Group F01, Group F07, Group F10 and Group F11 (except F11.03) only can be modified at the panel control mode (F00.07= 0) or the inspection mode.**

Quick operation of multi-bit setting parameter

Take F21.03 (service floor) for example, shown as Figure 7-9.

- On the setting parameter floor, directly pressing ◀ key and ▶ key can achieve quick shift of the 16-bit digital.
- After select the preset bit, change the bit via ▲ key and ▼ key.

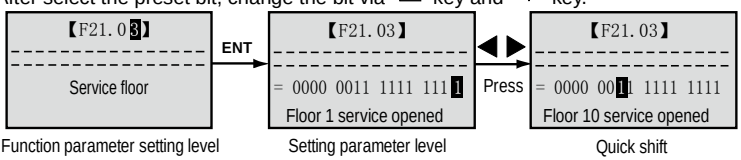


Figure 7-9 Quick operation of 16-bit setting parameter

7.3.2 User Password Operation

Take the user successful set password “00003” (F01.00 = 00003) and no fault for example.

The user password’s clear and modify should enter the setting parameter F01.00, and the operating process is shown as Figure 7-10.

- If there is neither user password nor fault, the panel will directly display “state display interface”.
- If there is no user password but fault, the panel will directly display “fault display interface”.
- If there is user password but no fault, after input the correct password, the panel will directly display “state display interface”.
- If there are user password and fault, after input the correct password, the panel will directly display “fault display interface”.
- The “state display interface” refers to section 7.1.4; the “fault display interface” refers to section 7.1.3.

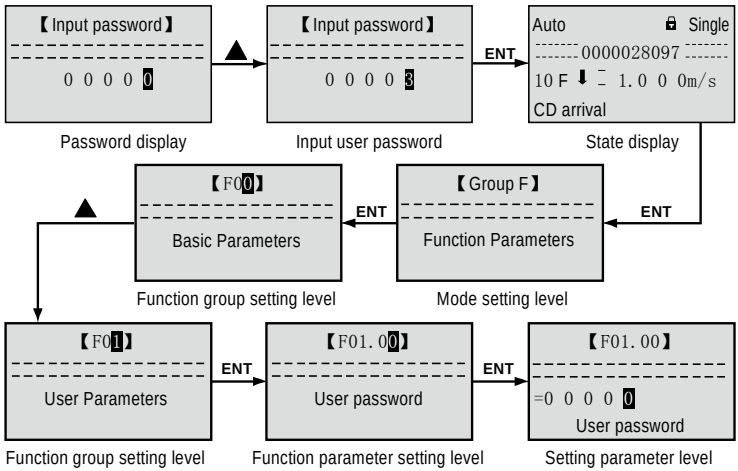


Figure 7-10 Enter to set parameters

User password’s clear

After enter the setting parameter F01.00 (always set F01.00 as “00000”), directly press **ENT** key to clear the password.

User password’s modify and set

After entering the setting parameter F01.00 (always set F01.00 as “00000”), directly set password, and then press **ENT** key to save.

If detected no press on the panel’s key within 5 minutes, the user password is valid; otherwise, restart 5 minute timer.

7.3.3 Panel Self-test

The panel of MONT71 series has self-test function which facilitates periodic inspection for its display and the keys.

The process of panel self-testing:

1. In MONT71 stopping state, press ◀ key and ENT key simultaneously for 2—3 seconds, the panel will check the LCD whether works well which is shown as Figure 7-11.

Figure 7-11 Start to display the panel self-test

2. Press any key of the panel and if the state is in anti-color display, it means the key is valid, which is shown as Figure 7-12.

During this process, if there is no press in 4—5 seconds, it will directly jump to the step 4. If the self-test is success, it will jump to the step 3.

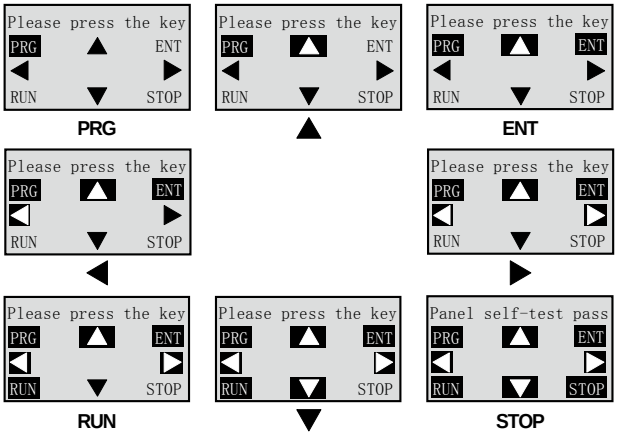


Figure 7-12 Panel's keys and correct corresponding displays

3. If all keys are valid, the panel will display "Panel self-test pass". The "Panel self-test pass" will auto-disappear within 3—5 seconds and back to display state before self-testing.

4. If the key is invalid, the corresponding display will not be in anti-color displaying. The panel will display "Panel self-test fail". The "Panel self-test fail" will auto-disappear within 3—5 seconds and back to display state before self-testing.

The possible reasons of self-testing failure: no press within 5s or invalid key.

7.3.4 Parameter Upload and Download

Upload: When the function parameter F01.03 = 1, it uploads the parameters from MCB to the panel. When the upload is finished, the panel will jump to display F01.00.

Download: When the function parameter F01.02 = 2, it downloads the parameter from the panel to MCB. When the download is finished, the panel will jump to display F01.03.

The upload, download, upload success and down success are shown as Figure 7-13.

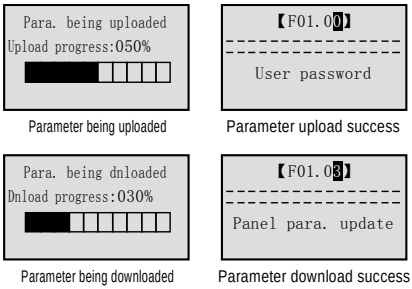


Figure 7-13 Display the parameter upload/download and their success

Figure 7-14 Display the parameter download failure

Note:

1. Only at the inspection mode or panel control can upload and download parameters.
2. At downloading the parameters, display the "parameter download failure", shown as Figure 7-14, representing that panel storage parameters and the parameters of the present MCB are inconsistent, or software versions are inconsistent.

Take measure: You need upload the setting value of the correct function parameter to the panel and ensure that the software versions are consistent, and then you can download.

3. When upload or download parameters, the panel displays "E0022", indicating that panel's EEPROM read/write abnormality. It will jump to next function parameter 10 seconds later.

Take measure: The troubleshooting is in Chapter 10 (page 213).

Chapter 8

Function Introduction

This chapter will provide detail function introduction.

Group D00 Configurations of Integrated Hardware and Software（page 109）
Group D01 Display Parameters in Drive State（page 110）
Group D02 Display Parameters of Main Control Board（page 111－118）
Group D03 Display Parameters of Floors for Service and Registration（page 118－119）
Group D04 Display Parameters of Elevator Running State（page 119－120）
Group D05 Display Parameters of Elevator Hardware（page 120－121）
Group D06 Hall Call State Parameters of Modbus Extension（page 121－122）
Group F00 Basic Parameters（page 122－124）
Group F01 User Parameters（page 124－127）
Group F02 Start and Stop Parameters（page 127－128）
Group F03 Acceleration and Deceleration Curve Parameters（page 128－130）
Group F04 Speed Parameters（page 130－132）
Group F05 Weighing Compensation Parameters（page 132－135）
Group F06 Manufacturer Debugging Parameters
Group F07 Asynchronous Motor Parameters（page 135－137）
Group F08 Vector Control Speed-loop Parameters（page 137－139）
Group F09 Vector Control Current-loop Parameters（page 139－139）
Group F10 Synchronous Motor Parameters（page 139－141）
Group F11 Encoder Parameters（page 141－142）
Group F12 Main Control Board Terminal Parameters（page 142－150）
Group F13 Main Control Board L-Terminal Parameters（page 150－153）
Group F14 Communication Parameters（page 153－154）
Group F15 Panel Display Parameters（page 154－155）
Group F16 Enhance Function Parameters（page 155－157）
Group F17 Fault Protect Parameters（page 157－160）
Group F18 PWM Control Parameters（page 160－161）
Group F19 Distance Control Parameters（page 161－163）
Group F20 Storey Height Parameters（page 163－165）
Group F21 Elevator Parameters（page 165－166）
Group F22 Door Machine Parameters（page 166－168）
Group F23 Time Parameters（page 168－169）
Group F24 Display Parameters of Floor Information（page 169－170）
Group F25 Test Running Parameters（page 170－171）
Group F26 Elevator Function Selections（page 171－179）
Group F27 Elevator Adjustment Enhanced Function Parameters（page179－179）

8.1 Group D: State Display Parameters

Group D is state display parameters. The users can directly check the state parameters by checking the function code of Group D.

8.1.1 Group D00 Configurations of Integrated Hardware and Software

D00.00	Controller series	【Actual value】

Display the MONT71 elevator integrated controller.

D00.01	Controller rated power	【Actual value】

Display the MONT71 rated power.

D00.02	Controller rated current	【Actual value】

Display the MONT71 rated current.

Note:

1. After the user replaces the main control board (MCB), the factory Y00.01 (model parameter) is needed to be reset, and D00.01 and D00.02 automatically refresh.

2. D00.01 and D00.02 must be the same as MONT71 actual power and current, otherwise the MONT71 will run abnormal!

D00.03	Hardware version of MCB	【Actual value】

Display the hardware version of MCB (MT71-MCB-A).

D00.04	Software version of MCB	【Actual value】

Display the software version of MCB (MT71-MCB-A).

D00.05	Software version of panel	【Actual value】

Display the software version of panel (MT70-LCD-A).

D00.06	Special software version of MCB	【Actual value】

Display the special software version of MCB (MT71-MCB-A).

8.1.2 Group D01 Display Parameters in Drive State

D01.00	S-curve preset speed	【Actual value】

Display the S-curve preset speed.

Display the maximum speed of the elevator at shutdown; display real-time preset speed at runtime.

D01.01	Elevator actual speed	【Actual value】

Display the elevator actual speed.

D01.02	Running RPM	【Actual value】

Display the running RPM.

D01.03	Output voltage	【Actual value】

Display the output voltage.

D01.04	Output current	【Actual value】

Display the output current.

D01.05	Output frequency	【Actual value】

Display the output frequency.

D01.06	DC bus voltage	【Actual value】

Display the DC bus voltage.

8.1.3 Group D02 Display Parameters of Main Control Board

D02.00	MCB analogue input voltage	【Actual value】

Display the MCB (MT71-MCB-A) analogue input (AI) voltage.

D02.01	MCB X-terminal input state 1	【Actual value】

Display the MCB digital input terminals (X1－X16) of state by a 16-bit binary, as following table:

Bit15: X16 terminal 0: Invalid 1: Valid	Bit14: X15 terminal 0: Invalid 1: Valid	Bit13: X14 terminal 0: Invalid 1: Valid	Bit12: X13 terminal 0: Invalid 1: Valid
Bit11: X12 terminal 0: Invalid 1: Valid	Bit10: X11 terminal 0: Invalid 1: Valid	Bit9: X10 terminal 0: Invalid 1: Valid	Bit8: X9 terminal 0: Invalid 1: Valid
Bit7: X8 terminal 0: Invalid 1: Valid	Bit6: X7 terminal 0: Invalid 1: Valid	Bit5: X6 terminal 0: Invalid 1: Valid	Bit4: X5 terminal 0: Invalid 1: Valid
Bit3: X4 terminal 0: Invalid 1: Valid	Bit2: X3 terminal 0: Invalid 1: Valid	Bit1: X2 terminal 0: Invalid 1: Valid	Bit0: X1 terminal 0: Invalid 1: Valid

D02.02	MCB X-terminal input state 2	【Actual value】

Display the MCB digital input terminals (X17－X27) of state by a 16-bit binary, as following table:

Bit15－Bit11: Reserved	Bit10: X27 terminal 0: Invalid 1: Valid	Bit9: X26 terminal 0: Invalid 1: Valid	Bit8: X25 terminal 0: Invalid 1: Valid
Bit7: X24 terminal 0: Invalid 1: Valid	Bit6: X23 terminal 0: Invalid 1: Valid	Bit5: X22 terminal 0: Invalid 1: Valid	Bit4: X21 terminal 0: Invalid 1: Valid
Bit3: X20 terminal 0: Invalid 1: Valid	Bit2: X19 terminal 0: Invalid 1: Valid	Bit1: X18 terminal 0: Invalid 1: Valid	Bit0: X17 terminal 0: Invalid 1: Valid

D02.03	MCB L-terminal input state 1	【Actual value】

Display the MCB floor input terminals (L1—L6) of state by a 16-bit binary, as following table:123

Bit15: L16 terminal 0: Invalid 1: Valid	Bit14: L15 terminal 0: Invalid 1: Valid	Bit13: L14 terminal 0: Invalid 1: Valid	Bit12: L13 terminal 0: Invalid 1: Valid
Bit11: L12 terminal 0: Invalid 1: Valid	Bit10: L11 terminal 0: Invalid 1: Valid	Bit9: L10 terminal 0: Invalid 1: Valid	Bit8: L9 terminal 0: Invalid 1: Valid
Bit7: L8 terminal 0: Invalid 1: Valid	Bit6: L7 terminal 0: Invalid 1: Valid	Bit5: L6 terminal 0: Invalid 1: Valid	Bit4: L5 terminal 0: Invalid 1: Valid
Bit3: L4 terminal 0: Invalid 1: Valid	Bit2: L3 terminal 0: Invalid 1: Valid	Bit1: L2 terminal 0: Invalid 1: Valid	Bit0: L1 terminal 0: Invalid 1: Valid

D02.04	MCB L-terminal input state 2	【Actual value】

Display the MCB floor input terminals (L17—L24) of state by a 16-bit binary, as following table:

Bit15－Bit12: Reserved	Bit11－Bit10: Reserved	Bit9: Reserved	Bit8: Reserved
Bit7: L24 terminal 0: Invalid 1: Valid	Bit6: L23 terminal 0: Invalid 1: Valid	Bit5: L22 terminal 0: Invalid 1: Valid	Bit4: L21 terminal 0: Invalid 1: Valid
Bit3: L20 terminal 0: Invalid 1: Valid	Bit2: L19 terminal 0: Invalid 1: Valid	Bit1: L18 terminal 0: Invalid 1: Valid	Bit0: L17 terminal 0: Invalid 1: Valid

D02.05	MCB X-terminal input logic state 1	【Actual value】

Display the MCB digital input terminals (X1—X24) of logic state by a 16-bit binary, as following table:

Bit15: Down limit 0: Invalid 1: Valid	Bit14: Up limit 0: Invalid 1: Valid	Bit13: Locked-elevator 0: Invalid 1: Valid	Bit12: Reserved
Bit11: Firefighting signal 0: No signal 1: Have the signal	Bit10: Down inspection 0: Invalid 1: Valid	Bit9: Up inspection 0: Invalid 1: Valid	Bit8: Inspection input 0: Invalid 1: Valid
Bit7: Locked-door output feedback 0: Invalid 1: Valid	Bit6: Synchronous motor self-locked feedback 0: Invalid 1: Valid	Bit5: Brake limit switch feedback 0: Invalid 1: Valid	Bit4: Brake output feedback 0: Invalid 1: Valid
Bit3: Run output feedback 0: Invalid 1: Valid	Bit2: Door zone signal 0: Invalid 1: Valid	Bit1: Down leveling signal 0: Invalid 1: Valid	Bit0: Up leveling signal 0: Invalid 1: Valid

D02.06	MCB X-terminal input logic state 2	【Actual value】

Display the MCB digital input terminals (X1—X24) of logic state by a 16-bit binary, as following table:

Bit15: Front/back door switch 0: No signal 1: Have the signal	Bit14: Isolated signal 0: No signal 1: Have the signal	Bit13: Commutation signal 0: No signal 1: Have the signal	Bit12: Direct arrival signal 0: No signal 1: Have the signal
Bit11: Driver signal 0: No signal 1: Have the signal	Bit10: Back door light curtain 0: No signal 1: Have the signal	Bit9: Front door light curtain 0: No signal 1: Have the signal	Bit8: Back door CD arrival 0: No arrival 1: Arrival
Bit7: Front door CD arrival 0: No arrival 1: Arrival	Bit6: Back door OD arrival 0: No arrival 1: Arrival	Bit5: Front door OD arrival 0: No arrival 1: Arrival	Bit4: Safe circuit 1 0: Disconnected 1: Connected
Bit3: Full load signal 0: No signal 1: Have the signal	Bit2: Over-loaded signal 0: No signal 1: Have the signal	Bit1: Down forced Dec. 0: No signal 1: Have the signal	Bit0: Up forced Dec. 0: No signal 1: Have the signal

D02.07	MCB X-terminal input logic state 3	【Actual value】

Display the MCB digital input terminals (X1—X24) of logic state by a 16-bit binary, as following table:

Bit15: Reserved	Bit14: Alarm input signal 0: No signal 1: Have the signal	Bit13: Back door prohibits the input signal 0: No prohibited signal 1: Have the signal	Bit12: Brake forcely feedback input 0: Invalid 1: Valid
Bit11: Edge input signal of back door 0: No signal 1: Have the signal	Bit10: Edge input signal of front door 0: No signal 1: Have the signal	Bit9: Earthquake monitoring input signal 0: No signal 1: Have the signal	Bit8: Motor over-heated input signal 0: No signal 1: Have the signal
Bit7: Fireman signal 0: No signal 1: Have the signal	Bit6: Half-load signal 0: No signal 1: Have the signal	Bit5: Locked-door circuit 2 0: Disconnected 1: Connected	Bit4: Locked-door circuit 1 0: Disconnected 1: Connected
Bit3: Safe circuit 2 0: Disconnected 1: Connected	Bit2: Close door button input 0: No input 1: Have the input	Bit1: Open door button input 0: No input 1: Have the input	Bit0: Battery-driven running signal 0: No input signal 1: Have the signal

D02.08	MCB X-terminal input logic state 4	【Actual value】

Display the MCB high voltage input terminals (X25—X27) of logic state by a 16-bit binary, as following table:

Bit15－Bit3: Reserved	Bit2: High-voltage locked-door signal 2 0: Disconnected 1: Connected	Bit1: High-voltage locked-door signal 1 0: Disconnected 1: Connected	Bit0: High-voltage safe signal 0: Disconnected 1: Connected

D02.09	L-terminal for front/back door OD/CD signal	【Actual value】

Display the elevator open/close door (OD/CD) signal state by a 16-bit binary, as following table:

Bit15－Bit8: Reserved			
Bit7: Back door prohibition 0: No prohibited signal 1: Have the signal	Bit6: Front/back door switch signal 0: No signal 1: Have the signal	Bit5: Back door OD delay button 0: No delay button 1: Have the button	Bit4: Back door CD button 0: Invalid 1: Valid
Bit3: Back door OD button 0: Invalid 1: Valid	Bit2: Front door OD delay button 0: No delay button 1: Have the button	Bit1: Front door CD button 0: Invalid 1: Valid	Bit0: Front door OD button 0: Invalid 1: Valid

D02.10	L-terminal for front door internal call state	【Actual value】

Display the 1st—10th floors of front door internal call state by a 16-bit binary, as following table:

Bit15－Bit12: Reserved	Bit11－Bit10: Reserved	Bit9: 10th floor of front door internal call 0: No 1: Yes	Bit8: 9th floor of front door internal call 0: No 1: Yes
Bit7: 8th floor of front door internal call 0: No 1: Yes	Bit6: 7th floor of front door internal call 0: No 1: Yes	Bit5: 6th floor of front door internal call 0: No 1: Yes	Bit4: 5th floor of front door internal call 0: No 1: Yes
Bit3: 4th floor of front door internal call 0: No 1: Yes	Bit2: 3rd floor of front door internal call 0: No 1: Yes	Bit1: 2nd floor of front door internal call 0: No 1: Yes	Bit0: 1st floor of front door internal call 0: No 1: Yes

D02.11	L-terminal for front door up call state	【Actual value】

Display the 1st—10th floors of front door up call state by a 16-bit binary, as following table:

Bit15－Bit12: Reserved	Bit11－Bit10: Reserved	Bit9: Reserved	Bit8: 9th floor of front door up call 0: No 1: Yes
Bit7: 8th floor of front door up call 0: No 1: Yes	Bit6: 7th floor of front door up call 0: No 1: Yes	Bit5: 6th floor of front door up call 0: No 1: Yes	Bit4: 5th floor of front door up call 0: No 1: Yes
Bit3: 4th floor of front door up call 0: No 1: Yes	Bit2: 3rd floor of front door up call 0: No 1: Yes	Bit1: 2nd floor of front door up call 0: No 1: Yes	Bit0: 1st floor of front door up call 0: No 1: Yes

D02.12	L-terminal for front door down call state	【Actual value】

Display the 1st—10th floors of front door down call state by a 16-bit binary, as following table:

Bit15－Bit12: Reserved	Bit11－Bit10: Reserved	Bit9: 10th floor of front door down call 0: No 1: Yes	Bit8: 9th floor of front door down call 0: No 1: Yes
Bit7: 8th floor of front door down call 0: No 1: Yes	Bit6: 7th floor of front door down call 0: No 1: Yes	Bit5: 6th floor of front door down call 0: No 1: Yes	Bit4: 5th floor of front door down call 0: No 1: Yes
Bit3: 4th floor of front door down call 0: No 1: Yes	Bit2: 3rd floor of front door down call 0: No 1: Yes	Bit1: 2nd floor of front door down call 0: No 1: Yes	Bit0: Reserved

D02.13	L-terminal for back door internal call state	【Actual value】
D02.14	L-terminal for back door up call state	【Actual value】
D02.15	L-terminal for back door down call state	【Actual value】

D02.13 displays the 1st—10th floors of back door internal call state, D02.14 displays the 1st—10th floors of back door up call state, and D02.15 displays the 1st—10th floors of back door down call state, which are the same with front door setting referring to D02.10—D02.12.

D02.16	MCB Y-terminal output logic state 1	【Actual value】

Display the MCB of relay output logic state by a 16-bit binary, as following table:

Bit15: Low 7-segment display output g 0: No 1: Yes	Bit14: Low 7-segment display output f 0: No 1: Yes	Bit13: Low 7-segment display output e 0: No 1: Yes	Bit12: Low 7-segment display output d 0: No 1: Yes
Bit11: Low 7-segment display output c 0: No 1: Yes	Bit10: Low 7-segment display output b 0: No 1: Yes	Bit9: Low 7-segment display output a 0: No 1: Yes	Bit8: Back door CD output 0: No 1: Yes
Bit7: Back door OD output 0: No 1: Yes	Bit6: Front door CD output 0: No 1: Yes	Bit5: Front door OD output 0: No 1: Yes	Bit4: Fan and light output 0: No 1: Yes
Bit3: Brake frocely output 0: Invalid 1: Valid	Bit2: Synchronous star - delta contactor output 0: Invalid 1: Valid	Bit1: Brake contactor output 0: Invalid 1: Valid	Bit0: Run contactor output 0: Invalid 1: Valid

D02.17	MCB Y-terminal output logic state 2	【Actual value】

Display the MCB of relay output logic state by a 16-bit binary, as following table:

Bit15: Battery-driven output at power off 0: No output 1: Output	Bit14: Reserved	Bit13: Reserved	Bit12: Integrated run correctly output 0: No output 1: Output
Bit11: High bit output of BCD, Gray code, and seven-segment 0: No output 1: Output	Bit10: Locked-door contactor output 0: Invalid 1: Valid	Bit9: Fan and light output 2 0: No output 2 1: Output 2	Bit8: Inspection signal output 0: No output 1: Output
Bit7: Full load output 0: No 1: Yes	Bit6: Arrival chime output 0: No 1: Yes	Bit5: Over-loaded output 0: No 1: Yes	Bit4: Buzzer output 0: No 1: Yes
Bit3: Firefighting back to station output 0: No output 1: Output	Bit2: Minus display output 0: No output 1: Output	Bit1: Down arrow display output 0: No output 1: Output	Bit0: Up arrow display output 0: No output 1: Output

8.1.4 Group D03 Display Parameters of Floors for Service and Registration

D03.00	Present floor	【Actual value】

Display the present floor which is relative to the bottom floor of the elevator.

D03.01	Present height	【Actual value】

Display the present height which is relative to the bottom leveling floor of the elevator.

D03.02	Distance of lowest floor	【Actual value】
D03.03	Distance of highest floor	【Actual value】

D03.02 and D03.03 respectively display the lowest and the highest of all floors.

D03.04	Registration state of front door 10—1 internal call floor	【Actual value】
D03.05	Registration state of back door 10—1 internal call floor	【Actual value】

D03.06	Registration state of front door 9—1 hall call up run	【Actual value】
D03.07	Registration state of back door 9—1 hall call up run	【Actual value】

D03.08	Registration state of front door 10—2 hall call down run	【Actual value】
D03.09	Registration state of back door 10—2 hall call down run	【Actual value】

D03.04—D03.09 are displayed by a 16-bit binary, and each bit binary represents one floor and the low bit represents low floor.

D03.04, D03.05 display whether there is the internal call registration of front/back door of 10—1 floors.

D03.06—D03.07 display whether there is the hall call up run registration of front/back door 9—1.

D03.08—D03.09 display whether there is the hall call down registration of front/back door 10—2.

- 1: This address of the floor has registration.
- 0: This address of the floor does not have registration.

8.1.5 Group D04 Display Parameters of Elevator Running State

D04.00	Elevator system state	【Actual value】

Display the elevator system state by a 16-bit binary, as following table:

Bit15: System back door edge 0: System back door edge is invalid 1: System back door edge is valid	Bit14: System front door edge 0: System front door edge is invalid 1: System front door edge is valid	Bit13: System over load 0: System over load signal is invalid 1: System over load signal is valid	Bit12: System full load 0: System full load signal is invalid 1: System full load signal is valid
Bit11－Bit8: Reserved	Bit7－Bit4: Elevator state 0000: Automation 0001: Inspection 0010: Battery-driven run 0011: Shaft self-learning	0100: Firefighting back to base station 0101: Fireman mode 0110: Driver mode	0111: Isolated run 1000: Auto back to leveling
Bit3: Hall call firefighting 0: Hall call firefighting is invalid 1: Hall call firefighting is valid	Bit2: Hall call locked-elevator 0: Hall call locked-elevator is invalid 1: Hall call locked-elevator is valid	Bit1: System back door light curtain 0: System back door light curtain is invalid 1: System back door light curtain is valid	Bit0: System front door light curtain 0: System front door light curtain is invalid 1: System front door light curtain is valid

D04.01	Door machine state	【Actual value】

Display the door machine state by a 16-bit binary, as following table:

Bit15－Bit6: Reserved			
Bit5－Bit3: Back door machine state		Bit2－Bit0: Front door machine state	
000: Opening	011: Close door arrival	000: Opening	011: Close door arrival
001: Open door arrival	100: Door machine fault	001: Open door arrival	100: Door machine fault
010: Closing	101: Door machine stop	010: Closing	101: Door machine stop

D04.02	High bit of elevator run times	【Actual value】
D04.03	Low bit of elevator run times	【Actual value】

Display the high bit and the low bit of elevator run times.

Run times = D04.02 × 65536 + D04.03.

D04.04	Total running time (hour)	【Actual value】

Display the elevator total running time and its unit is hour.

D04.05	Heatsink temperature	【Actual value】

Display the heatsink temperature and its unit is ℃.

D04.06	Present fault code	【Actual value】

Display the present fault code.

8.1.6 Group D05 Display Parameters of Elevator Hardware

D05.00	C phase AD sample value of Sincos encoder	【Actual value】

Display the C phase AD sample value of Sincos encoder.

D05.01	D phase AD sample value of Sincos encoder	【Actual value】

Display the D phase AD sample value of Sincos encoder.

D05.02	A phase AD sample value of Sincos encoder	【Actual value】

Display the A phase AD sample value of Sincos encoder.

D05.03	B phase AD sample value of Sincos encoder	【Actual value】

Display the B phase AD sample value of Sincos encoder.

D05.04	UVW state of UVW encoder	【Actual value】

Display the UVW state of UVW encoder.

D05.05	Electrical angle	【Actual value】

Display the electrical angle.

D05.06	Leveling switch number	【Actual value】

Display the leveling switch number.

D05.07	Length between leveling switches	【Actual value】

Display the length between leveling switches. And the unit is mm.

D05.08	Leveling plate length	【Actual value】

Display the leveling plate length. And the unit is mm.

D05.09	Encoder pulse count	【Actual value】

Display the encoder pulse count.

When the motor is rotating, the encoder pulse input can be judged by the change of this parameter.

D05.10	Manufacturer debugging parameter, prohibit to change	

D05.11	Buzzer source	【Actual value】

Display the buzzer action source.

0: No action.

1: To remind at excessive position deviation returning to base station.

2: To remind there is hall call information at driver mode.

3: To remind at elevator over-loaded.

4: To remind at battery-driven.

5: To remind at forced close door.

6: To remind at firefighting back to base station.

7: To earthquake signal input.

8: To remind there is alarm input.

D05.12—D05.49	Manufacturer debugging parameter, prohibit to change	

8.1.7 Group D06 Hall Call State Parameters of Modbus Extension

D06.00	Software version of hall call board (HCB)	【Actual value】

Display the software version of hall call board.

D06.01	HCB communication interference evaluation	【Actual value】

Indicate the hall call board (HCB) communication quality. The larger the value is, the greater the communication interference is.

D06.02	Hall call node communication state 1	【Actual value】

Display the communication state of hall call node 10—1.

D06.03	Hall call node communication state 2	【Actual value】

Display the communication state of hall call node 34—25.

Through-open back door address = Front door address + 24.

8.2 Grou F: Function Parameters

8.2.1 Group F00 Basic Parameters

F00.00	Motor type	0,1【0】

0: Asynchronous motor.

1: Synchronous motor.

Note:

1. If the motor type is selected as asynchronous motor, the motor parameters are corresponding to Group F07.

2. If the motor type is selected as synchronous motor, the motor parameters are corresponding to Group F10.

F00.01	Control mode	0—2【2】

0: Constant voltage/frequency (VF) control. The constant control voltage/frequency ratio is only applicable for the asynchronous motor.

1: Open-loop vector (SVC) control. The vector control without speed sensor is only applicable for the asynchronous motor.

2: Encoder closed-loop (VC) control. The vector control with speed sensor is applicable for normal distance control.

Note:

1. V/f control and SVC control are applicable for the asynchronous motor without installing encoder which is a kind of temporary run mode when the elevator is in inspection run.

2. The synchronous motor can only use the VC control, and must do the parameter auto-tuning before inspection running! Otherwise it may be out of control!

F00.02	Elevator max running speed	0.150—F00.03【0.500m/s】

Define the elevator max running speed.

- The upper limit of the setting range is F00.03 (elevator rated speed).
- Speed-related parameters of Group F04 and Group F19 should be smaller than F00.02.

F00.03	Elevator rated speed	0.150—1.500【0.500m/s】

Define the elevator nominal rated speed.

- This speed is decided by the elevator mechanical structure and traction machine rated speed.

F00.04	Elevator rated load	100—50000【1000kg】

Define the elevator nominal rated load.

- The anti-nuisance function will use the function of F00.04.

F00.05	Controller max output frequency	5.00—100.00【50.00Hz】

Define the controller allowable output max frequency.

Note: F00.05 must not be less than the motor rated frequency and is normally set as rated frequency of the motor

F00.06	Traction machine mechanical parameter	10.0—6000.0【20.0】

The formula for calculating motor mechanical parameters is as below:

$$F00.06 = \frac{\pi \times D}{i \times \text{Winding mode}}$$

- D: Diameter of motor (mm); i: Dec. rate; Winding mode: To set in accordance with the actual elevator setting.

Note:

F00.06 is calculated based-on the traction machine parameters. It decides the control precision and must be correctly set; otherwise it can not run normally at the distance control. The specific performances are as follows:

1. The panel displaying speed and the elevator actual speed are inconsistent.

2. The data from shaft self-learning and the actual floor data are different.

F00.07	Operation mode	0,1【1】

0: Panel control.

- Via **RUN** and **STOP** keys of the panel to control; the running speed is set by F00.09.
- Only use for testing or motor parameter auto-tuning.

1: Distance control.

- At inspection running, the elevator runs in accordance with F04.00 (inspection run speed).
- At normally running, automatically calculating the speed and run curve in accordance with the elevator present floor and the distance of destination floor achieves direct stop.

Note: At elevator normally running, F00.07 must be set as 1.

F00.08	Manufacturer debugging parameter, prohibit to change	
F00.09	Speed setting via panel	0.000—F00.02【0.500m/s】

When F00.07 = 0, set the target speed at running.

F00.10	Elevator run direction	0,1【0】

0: The elevator run direction is the same as run command.

1: The elevator run direction is opposite to run command.

Note:

1. **When debugging the elevator, if the preset direction and the elevator actual run direction are inconsistent, you can set the inverse F00.10.**
2. **When normally run, F00.10 can not be changed. If the original system has floor data, when modify F00.10, the shaft self-learning is needed to restart.**

8.2.2 Group F01 User Parameters

F01.00	User password	00000—65535【00000】

XXXXX: Set the user password (any non-zero digital).

- Once the password is set, after press **ENT** key, and then detect that there is no press on the panel within five minutes, the user password will be valid; If detect a press on the panel key within five minutes, a 5-minute timer will be restarted.
- If the password is valid, it is necessary to input correct password if you want to check and change the parameters.

00000: MONT71 factory setting.

- If the user wants to clear the password, please refer to section 7.3.2 User Password Operation (page 103).

Note: After the user password is set, you should keep the password in mind.

F01.01	Menu mode selection	0—2【0】

0: Standard menu mode.

- All of the function parameter can be displayed.

1: Checking menu mode.

- Only different from factory setting parameters can be displayed.

2: Reserved.

F01.02	MCB parameter update	0—12【0】

0: No operation.

1: Restore to factory settings.

- Except Group F01, F07.00—F07.14, F10.00—F10.09, Group F11, F15.00, F17.08—F17.21 and Group Y.
- **Operation steps:** Set F01.02 = 1, press **ENT** key to confirm and restore the factory settings, the panel will display the "loading default parameter". Then the panel will jump to "status display interface" after finish restoring to factory setting.

2: Download panel parameter group 1 to MCB.

- Except Group F01, F17.08—F17.21 and Group Y.
- At downloading parameters, such as motor parameters, encoder parameters and magnetic pole angle etc. will be downloaded. The original motor parameters, encoder parameters and magnetic pole angle etc. need to be recorded, or restart parameter auto-tuning.

3: Clear fault information.

- The faulty history information of 17.08—F17.21 will be cleared.
- **Operating steps:** Set F01.02 = 3, press **ENT** key to confirm and clear fault information, the panel will display "clearing fault information". Then the panel will display next parameter F01.03 after finish clearing the fault information.

4: Download the panel parameter group 2 to MCB.

5: Download the panel parameter group 3 to MCB.

6: Download the panel parameter group 4 to MCB.

7: Download the panel parameter group 5 to MCB.

8: Download the panel parameter group 6 to MCB.

9: Download the panel parameter group 7 to MCB.

10: Download the panel parameter group 8 to MCB.

11: Download the panel parameter group 9 to MCB.

12: Download the panel parameter group 10 to MCB.

Note: The F01.02 setting of No. 4 – 12 functions is the same with No. 2 function.

F01.03	Panel parameter update	0—10【0】

0: No operation. MONT71 is in the normal parameters of read and write state.

1: Upload MCB parameters to panel parameter group 1. Except Group F01, F17.08—F17.21 and Group Y.

2: Upload MCB parameters to panel parameter group 2.

3: Upload MCB parameters to panel parameter group 3.

4: Upload MCB parameters to panel parameter group 4.

5: Upload MCB parameters to panel parameter group 5.

6: Upload MCB parameters to panel parameter group 6.

7: Upload MCB parameters to panel parameter group 7.

8: Upload MCB parameters to panel parameter group 8.

9: Upload MCB parameters to panel parameter group 9.

10: Upload MCB parameters to panel parameter group 10.

Parameter upload (F01.03 = 1) and download (F01.02 = 2)

You can simplify the parameter setting via parameter upload and download to improve debugging efficiency. Parameter upload and download are generally applied on the following occasions:

1. After on-site debugging one elevator, this elevator parameter is needed to copy to another elevator.

2. If the on-site debugging MCB need to be replaced by a new one, the new MCB parameters need to re-set.

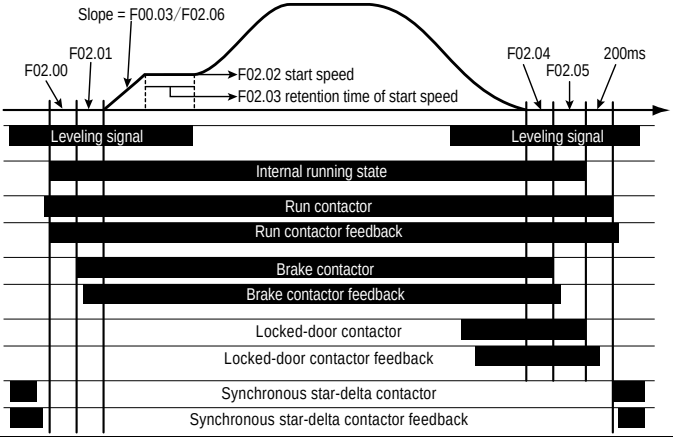
Both of these cases can set F01.03 as 1 (upload parameter to panel), then in the other MCB set F01.02 as 2 (download parameter to MCB).

Notes of upload and download:

1. **For the replaced MCB, after parameters upload and download, if equipped with Sincos encoder interface card, the parameter auto-tuning should be restarted due to the MCB hardware parameter differences.**
2. **For different elevator parameters download, you need to restart shaft self-learning; otherwise the floor data may be inconsistent with the actual, which can affect the normal operation of the elevator.**
3. **Replace the MCB for different motor, you need to re-start parameter auto-tuning, or it may be out of control.**
4. **Parameter upload and download can be done only at the inspection mode or panel control mode.**

8.2.3 Group F02 Start and Stop Parameters

The correspondence relationship of various signals and curves in the running process follows FIG.



F02.00	Retention time of start zero-speed	0.000—2.000【0.200s】

Define the time of zero-speed output before brake-open. During this time, a magnetic field can be created, which may improve the starting comfort.

F02.01	Delay time of curve run	0.000—2.000【0.500s】

Define the delay time of curve from zero-speed to preset speed.

Note: When F05.00 (pre-torque selection) is set as 3 (pre-torque auto-compensation), F02.01 is set to at least 0.5s.

F02.02	Start speed	0.000—0.030【0.000m/s】
F02.03	Retention time of start speed	0.000—2.000【0.000s】

F02.02 defines the MONT71 initial speed at start.

- Setting a suitable start speed can overcome the static friction at elevator starting, but if the setting is too large, it will cause the starting instant impact.

F02.03 defines the retention time of running start speed (F02.02) during MONT71 starting process.

F02.04	Brake close delay time at stop	0.000—2.000【0.200s】

Define the time of MONT71 from zero-speed to brake close command output.

F02.05	Zero-speed retention time at stop	0.000—2.000【0.300s】

Define the time of keeping motor zero-speed with output torque at stopping, which may improve the comfort.

Note: If the synchronous motor needs to remove the current ramp, this setting time should be greater than or equal to F16.00.

F02.06	Start ramp time	0.000—2.000【0.000s】

Define the time that elevator takes to accelerate from zero to the elevator rated speed (F00.03) with the use of F02.02.

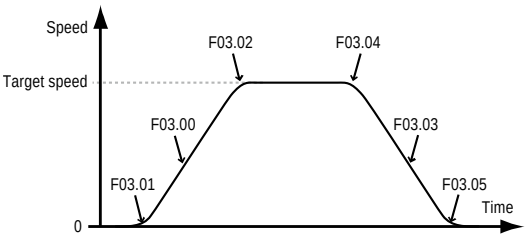
- When F02.06 is set as 0, the ramp is invalid.

8.2.4 Group F03 Acceleration and Deceleration Curve Parameters

F03.00	Acceleration speed	0.020—2.000【0.250m/s^2】
F03.01	Start Acc jerk	0.020—2.000【0.250m/s^3】
F03.02	End Acc jerk	0.020—2.000【0.250m/s^3】
F03.03	Deceleration speed	0.020—2.000【0.250m/s^2】
F03.04	Start Dec jerk	0.020—2.000【0.250m/s^3】
F03.05	End Dec jerk	0.020—2.000【0.250m/s^3】

The following figure shows the effect of F03.00—F03.05 at elevator running S-curve.

- Acc/Dec jerk: The change ratio of acceleration/ deceleration.
- The S-curve becomes steeper and Acc/Dec become faster when parameter values are raised; the S-curve and Acc/Dec become slower when parameter values are decreased.



F03.06	Inspection Acc speed	0.020—2.000【0.250m/s^2】
F03.07	Inspection Dec speed	1.000—2.000【1.000m/s^2】

Define the elevator Acc and Dec speed at inspection run mode.

F03.08	Battery driven Acc speed	0.020—2.000【0.250m/s^2】
F03.09	Battery driven Dec speed	0.020—2.000【1.000m/s^2】

Define the elevator Acc and Dec speed at battery driven run mode.

F03.10	Asynchronous motor parameter auto-tuning Acc speed	0.020—2.000【0.100m/s^2】
F03.11	Asynchronous motor parameter auto-tuning Dec speed	0.020—2.000【0.100m/s^2】

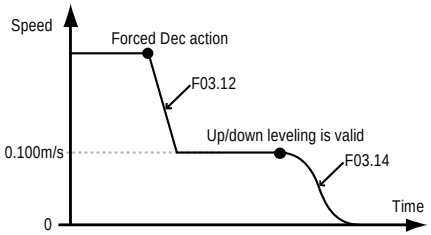
Define the asynchronous motor Acc and Dec speed at rotating auto-tuning.

F03.12	Forced Dec speed	0.500—2.000【0.500m/s^2】

Define the deceleration speed when the forced deceleration is effective.

- When the up and down forced deceleration switch is action and the present detected speed is larger than F04.06—F04.08, the forced deceleration will be valid.
- When the up and down forced deceleration switch is action and the deviation of the present position and the shaft self-learning position are too large, the forced deceleration will be valid.

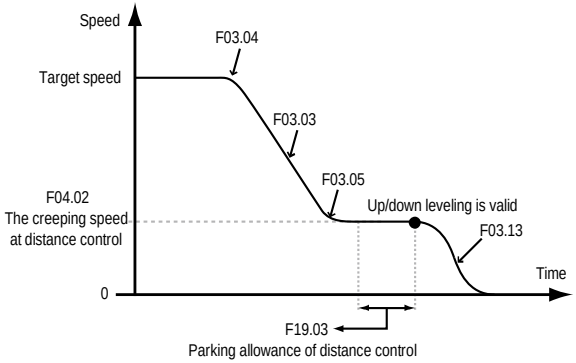
When the forced deceleration switch is action, the elevator decelerates to 0.100m/s in accordance with F03.12 and creeps to the leveling area, slow down at speed of F03.14 and stop, which is shown as following figure.



F03.13	Stop Dec jerk	0.002—2.000【0.230m/s^3】

Define the Dec jerk from creeping speed to zero-speed at direct parking mode 1 (F19.06 = 1) to adjust the leveling effect with the creeping speed (F04.02) together, as following figure.

- When modify F04.02, MONT71 will automatically update F03.13.
- Just fine-tuning F03.13 can adjust the leveling accuracy.
- F03.13 is automatically updated in the shaft self-learning.



F03.14	Forced stop Dec jerk	0.002—2.000【0.080m/s^3】

This parameter is used to ensure the leveling accuracy at forced deceleration action.

This parameter is automatically updated in the shaft self-learning, and generally not need to change by the user.

8.2.5 Group F04 Speed Parameters

F04.00	Inspection run speed	0.000—0.630【0.200m/s】

Define the run speed of the elevator at the inspection mode. Elevator GB provides the speed can not be greater than 0.63m/s.

- The elevator inspection runs to up and down effectively forced signal and the running speed is 0.100m/s.
- After the inspection up and down run direction is revoked, the stop mode can be set as immediate stop or Dec stop (set by the Bit2 of F26.12).
- When the inspection run encounters the upper and lower limit, in order to prevent crossing the limit, the stop mode will become immediate stop.

F04.01	Battery driven run speed	0.020—0.100【0.050m/s】

Define the elevator run speed at battery driven mode. (Non-automatic running car)

F04.02	The creeping speed at distance control	0.050—0.150【0.100m/s】

Define the creeping speed of the direct parking mode 1 (set F19.06 as 1).

F04.03	Shaft self-learning speed	0.100—0.300【0.2000m/s】

Define the elevator speed at the shaft self-learning.

F04.04	Re-leveling speed	0.020—0.080【0.040m/s】

Define the elevator running speed in a non-inspection mode, automatically return to the leveling process to reach the leveling area (where a leveling switch has been activated, and the other leveling switch unactuated), and the running speed in open door of the re-leveling.

- In the non-leveling area, the speed is 0.200m/s at automatically returns to leveling.

F04.05	Advanced open speed	0.020—0.100【0.050m/s】

Define that open the door in advance when the elevator running speed is less than F04.05.

Note:

1. When set F26.05 as 1 (with advanced open function), this parameter is valid.

2. The advanced open block (MT70-AOB-A) should be equipped.

F04.06	Forced Dec speed setting	0.0—105.0(F00.03)【103.0%】
F04.07, F04.08	Manufacturer debugging parameter, prohibit to change	

The preset value of F04.06 is relative to the percentage of the elevator rated speed.

- F04.06 is corresponding to the speed reference point of up/down forced deceleration switch.
- At up/down forced deceleration switch action, if the car speed is greater than the forced Dec. speed setting (F04.06), it will decelerate to 0.100m/s in accordance with forced deceleration (F03.12).
- There is one forced deceleration switch installing in the shaft, and its position is refered to the figure of parameters F19.12—F19.13.

F04.09	Over-speed setting	80.0—120.0(F00.03)【115.0%】
F04.10	Over-speed detection time	0.1—2.0【0.3s】

When elevator actual speed exceeds the F04.09 setting and lasts longer than the F04.10 setting, it will alarm E0032 fault (motor over speed).

- The setting value of F04.09 is relative to the percentage of elevator rated speed.

F04.11	Detected value of speed deviation	5.0—30.0(F00.03)【20.0%】
F04.12	Detected time of speed deviation	0.1—2.0【1.0s】

When the deviation of preset speed and motor actual running speed exceeds the F04.11 setting, and lasts longer than the F04.12 setting, it will alarm E0018 fault (excessive speed deviation).

- The setting value of F04.11 is relative to the percentage of elevator rated speed.

8.2.6 Group F05 Weighing Compensation Parameters

F05.00	Pre-torque selection	0—3【0】

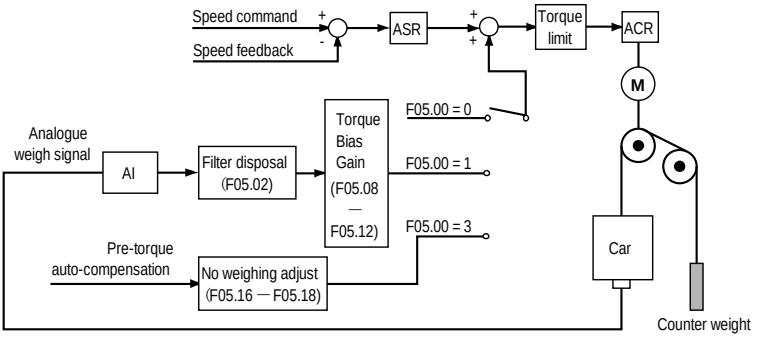
Starting pre-torque function can pre-output torque which is corresponds to the torque of load weight, to avoid the car slipping at starting and reduce start impact.

0: No pre-torque.

1: Analogue weighing. The corresponding compensation torque will be output in accordance with the input analog weighing signal.

2: Reserved.

3: Pre-torque auto-compensation.



F05.01	Analogue weighing selection	0,1【0】

To set the analogue weighing in accordance with the elevator equipped with weighing device type.

0: No analogue weighing.

1: Analogue weighing.

F05.02	Weighing analogue filter time	0.00—2.00【0.50s】

Define the analogue filter time.

- The greater F05.02 is, the stronger filtering effect is, and the greater the signal lag is.

F05.03	Analogue weighing self-learning	0—2【0】
F05.04	Car no-load	0.00—10.00【0.00V】
F05.05	Car full-load	0.00—10.00【8.00V】
F05.06	Self-learning car load	0—100【0%】

F05.03 defines the analogue weighing self-learning modes.

0: No self-learning.

1: No-load self-learning.

2: Other load self-learning.

- Refer to the torque compensation of section 9.1.9 Adjustment for Comfortable Feeling (page 198) about F05.03—F05.06.

F05.07	Anti-nuisance function	0—3【0】

0: No anti-nuisance function.

1: In accordance with weighing. This function must work with analogue weighing sensor or digital light-load signal.

- If the car command registered number is over the person number in car plus three, the system will clear up all commands (and each person according to 70 Kg).

2: In accordance with light curtain. This function must work with light curtain signal.

- When the elevator runs and arrives to the station for three consecutive times and the OD light curtains are not action, which will be considered as nuisance and all of the car commands will be automatically cleared up.

3: Both weighing and light curtain. Both weighing and light curtain will work.

Remark: The anti-nuisance function will not work at the test mode (set F25.03 as non-zero value).

F05.08	Pre-torque bias	0.0—100.0【50.0%】
F05.09	Up electrical pre-torque gain	0.000—9.000【1.000】
F05.10	Up brake pre-torque gain	0.000—9.000【1.000】
F05.11	Down electrical pre-torque gain	0.000—9.000【1.000】
F05.12	Down brake pre-torque gain	0.000—9.000【1.000】

F05.08 is actually the balance coefficient of the elevator and it is also the percentage of the rated weight in the car when the car is in balance with the counterweight.

F05.09—F05.12 are the elevator pre-torque coefficients when the motor is in electrical or brake state.

- If the car is in full loading, the elevator runs up, the motor is in electrical running state; the elevator runs down, the motor is in brake running state.
- If the car is in non-loading, the elevator runs up, the motor is in brake running state; the elevator runs down, the motor is in electrical running state.
- The greater the gain is, the greater the elevator start compensation value is.
- The controller can identify the electrical and brake state according to the weighing sensor signals, and then work out desirable torque compensation values.

When set F05.00 as 1 (analogue weighing) or 2 (digital weighing), details of adjusting ways are as follows:

- In up electrical state, if the elevator rolls back when starts, increase F05.09; if the elevator rushes to start, reduce F05.09.
- In up brake state, if the elevator rolls back when starts, increase F05.10; if the elevator rushes to start, reduce F05.10.
- In down electrical state, if the elevator rolls back when starts, increase F05.11; if the elevator rushes to start, reduce F05.11.
- In down brake state, if the elevator rolls back when starts, increase F05.12; if the elevator rushes to start, reduce F05.12.

F05.13—F05.15	Manufacturer debugging parameter, prohibit to change	

F05.16	No weighing current coefficient	0—9999【3000】
F05.17	No weighing speed-loop KP	1—9999【1000】
F05.18	No weighing speed-loop KI	1—9999【1000】

F05.16—F05.18 are used to adjust the effect of pre-torque auto-compensation (F05.00 = 3).

- To increase F05.16—F05.18 can increase the response speed of the system, but too large will cause the system overshoot and oscillation.
- At debugging, adjusting F05.16 can achieve the elevator smooth start generally.
  - At the starting moment the elevator slips car, increase F05.16; at the starting moment elevator vibrates, reduce F05.16.

8.2.7 Group F06 Manufacturer Debugging Parameters

F06.00	Manufacturer debugging parameter, prohibit to change	
F06.01	Manufacturer debugging parameter, prohibit to change	
F06.02	Manufacturer debugging parameter, prohibit to change	
F06.03	Manufacturer debugging parameter, prohibit to change	
F06.04	Manufacturer debugging parameter, prohibit to change	
F06.05	Manufacturer debugging parameter, prohibit to change	

8.2.8 Group F07 Asynchronous Motor Parameters

F07.00	Asynchronous motor rated power	0.2—500.0kW【Depend on model】
F07.01	Asynchronous motor rated voltage	0—999V【Depend on model】
F07.02	Asynchronous motor rated current	0.0—999.9A【Depend on model】
F07.03	Asynchronous motor rated frequency	1.00—F00.05【50.00Hz】
F07.04	Asynchronous motor rated RPM	1—24000【1440rpm】
F07.05	Asynchronous motor power factor	0.001—1.000【0.850】

Please set F07.00—F07.05 in accordance with parameters of motor nameplate.

F07.06	Asynchronous motor parameter auto-tuning	0—2【0】

0: No action.

1: Motor static auto-tuning.

2: Motor rotation auto-tuning.

- See the section 9.1.3 Motor Parameter Auto-tuning (page 186) for the detail parameter auto-tuning.

F07.07	Asynchronous motor stator resistance	0.000—65.535Ω【Depend on model】
F07.08	Asynchronous motor rotor resistance	0.000—65.535Ω【Depend on model】
F07.09	Asynchronous motor leakage inductance	0.0—6553.5mH【Depend on model】
F07.10	Asynchronous motor mutual inductance	0.0—6553.5mH【Depend on model】

F07.11	Asynchronous motor no-load current	0.0—999.9A 【Depend on model】
F07.12	Asynchronous motor of core saturation coefficient 1	0.00—0.50【0.50】
F07.13	Asynchronous motor of core saturation coefficient 2	0.00—0.75【0.75】
F07.14	Asynchronous motor of core saturation coefficient 3	0.00—1.20【1.20】

It will automatically update parameters F07.07—F07.14 after motor parameters auto-tuning.

F07.15	Asynchronous motor torque boost	0.1—30.0【0.1%】
F07.16	Asynchronous motor torque boost end-point	0.0—50.0(F07.03)【10.0%】
F07.17	Asynchronous motor of slip compensation gain	0.0—300.0【100.0%】
F07.18	Asynchronous motor of slip compensation filter time	0.1—10.0【0.1s】
F07.19	Asynchronous motor of slip compensation limitation	0.0—250.0【200.0%】

Note: F07.15, F07.16, F07.18 and F07.19 can only work at V/f control and asynchronous motor parameter rotation auto-tuning.

F07.20	Asynchronous motor performance optimization	0—65535【0】

Bit0: Exciting current optimization

0: Normal processing.

1: Optimization processing.

Bit1: Methods of exciting current optimization

0: Voltage method.

1: Current method.

Bit2—Bit15: Reserved

F07.21	Asynchronous motor of oscillation-suppression mode	0,1【1】

0: Oscillation suppression is dependent on the motor's exciting component.

1: Oscillation suppression is dependent on the motor's torque component.

F07.22	Asynchronous motor of oscillation-suppression coefficient	0—200【100】

For suppressing the inherent oscillations generated by MONT71 with motor.

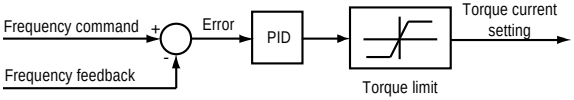
- If the constant load runs, when the output current changes repeatedly, can set F07.22 on the basis of the factory setting parameters to eliminate the oscillation, so that the motor can run smoothly.

Note: F07.21 and F07.22 can only work at V/f control and asynchronous motor parameter rotation auto-tuning.

8.2.9 Group F08 Vector Control Speed-loop Parameters

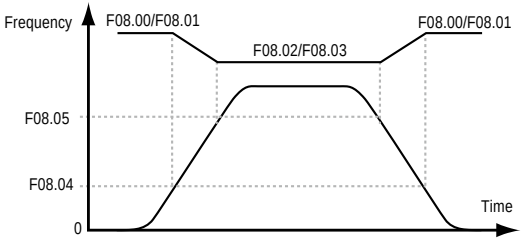
F08.00	Low speed ASR KP	1—9999【500】
F08.01	Low speed ASR KI	1—9999【500】
F08.02	High speed ASR KP	1—9999【500】
F08.03	High speed ASR KI	1—9999【500】
F08.04	ASR PI switching frequency 1	0.00—50.00【10.00Hz】
F08.05	ASR PI switching frequency 2	0.00—50.00【15.00Hz】

The parameters of F08.00—F08.07 comfirm the PID parameters of ASR. The structure of ASR is shown in following figure:



As the following figure:

- When operates in a range of 0—F08.04, the PI parameters of vector control are F08.00 and F08.01;
- When operates above F08.05, the PI parameters of vector control are F08.02 and F08.03;
- When operates with frequency in a range of F08.04—F08.05, vector control P parameter is the linear interpolation between F08.00 and F08.02, while vector control I parameter is the linear interpolation between F08.01 and F08.03.



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- The system's response can be expedited through increasing the ASR KP (F08.00, F08.02), but oscillation may occur if the value of KP is too high.
- The system's response can be expedited through increasing the ASR KI (F08.01, F08.03), but oscillation and high overshoot happen easily if the value of KI is too high.
  - If F08.01/F08.03 = 0, and the integral function is disabled, the speed-loop works only as a proportional regulator.
- Generally, the KP should be adjusted firstly to the maximum on condition that the system does not vibrate, and then the KI should be adjusted to shorten the response time without overshoot.

F08.06	**ASR integral limitation**	**0.0—200.0 (motor rated current)【180.0%】**

Define the maximum integral value of the vector control ASR integral. Its setting is relative to the percentage of the motor rated current.

F08.07	**ASR differential time**	**0.000—1.000【0.000s】**

Define the vector control ASR differential time. No need to set normally. When it is necessary to accelerate the dynamic response, it may be set appropriately.

- There isn't speed-loop differential when F08.07=0.

F08.08	**ASR output filter time**	**0.000—1.000【0.008s】**

Filter the output of ASR (speed-loop) regulator.

- When F08.08 = 0, the speed-loop filter is disabled.

F08.09	**Torque limitation**	**0.0—200.0 (motor rated current)【180.0%】**

F08.09 is used to set the torque upper limitation. Its setting is relative to the percentage of the motor rated current.

- If the torque is too small, the run speed may deviate from the setting value.

Note: Users generally do not need to modify F08.06 − F08.09.

8.2.10 Group F09 Vector Control Current-loop Parameters

F09.00	Current-loop KP	1—4000【500】
F09.01	Current-loop KI	1—4000【500】

Define the PI regulator parameter of current-loop (ACR).

- F09.00 and F09.01 directly impact the system dynamic response speed and control accuracy, and the appropriate adjustment may be required on different occasions.
- The synchronous motor may have obvious effect to the comfort by adjusting F09.00 and F09.01, and the jitter in elevator operation can be suppressed by adjusting appropriately.

F09.02	Current-loop output filter time	0.000—1.000【0.000s】

When set F09.02 as 0, the current-loop output has no filter. And users generally do not need to change.

F09.03—F09.07	Manufacturer debugging parameter, prohibit to change	

8.2.11 Group F10 Synchronous Motor Parameters

F10.00	Synchronous motor type	0,1【0】

0: IPM.

1: SMPM.

F10.01	Synchronous motor rated power	0.4—400.0kW【Depend on model】
F10.02	Synchronous motor rated voltage	0—999V【Depend on model】
F10.03	Synchronous motor rated current	0.0—999.9A【Depend on model】
F10.04	Synchronous motor rated frequency	1.00—F00.05【19.20Hz】
F10.05	Synchronous motor rated RPM	1—24000【96rpm】
F10.06	Synchronous motor stator resistance	0.000—9.999【0.000Ω】
F10.07	Synchronous motor cross axis inductance	0.0—999.9【0.0mH】
F10.08	Synchronous motor direct axis inductance	0.0—999.9【0.0mH】
F10.09	Synchronous motor Back EMF	0—999【0V】

Please set F10.01—F10.09 in accordance with parameters of motor nameplate.

F10.10	Synchronous motor of angle auto-tuning	0—2【0】

0: No action.

1: Static angle auto-tuning.

2: Rotation angle auto-tuning.

- See the section 9.1.3 Motor Parameter Auto-tuning (page 186) for the auto-tuning.

F10.11	Synchronous motor static auto-tuning voltage setting	0.0—100.0 (F10.02)【100.0%】

If the overcurrent fault is alarmed at synchronous motor static auto-tuning, it may reduce the setting value appropriately.

F10.12	Synchronous motor initial angle	0.0—359.9【0.0° 】
F10.13	Synchronous motor of Z pulse initial angle	0.0—359.9【0.0° 】
F10.14	Sincos encoder C amplitude	0—9999【2048】
F10.15	Sincos encoder C zero-bias	0—9999【2048】
F10.16	Sincos encoder D amplitude	0—9999【2048】
F10.17	Sincos encoder D zero-bias	0—9999【2048】

F10.12 is a learning angle after synchronous motor auto-tuning and an important parameter for the synchronous motor normal starting, which should not be arbitrarily changed.

F10.13 this parameter should be reserved.

F10.14—F10.17 are the parameter auto-tuning results with sincos encoder, and can not be changed casually.

F10.18	Sincos encoder CD phase	0,1【0】

0: Normal.

1: CD phase is opposite.

F10.19	Synchronous motor current filter coefficients	0—40【0】
F10.20	Performance optimization parameters	0—65535【0】

Bit0: Inspection run parameter auto-tuning

0: Do not automatically parameter tuning.

1: Automatically parameter tuning.

Bit1: Current loop parameters are automatically optimized

0: Manually optimize.

1: Automatically optimize.

Bit2: SINCOS encoder performace optimized

0: Normal processing.

1: Optimization processing.

Bit3: Elevator speed and grid voltage optimization

0: Normal processing.

1: Optimization processing.

Bit4—Bit15: Reserved

8.2.12 Group F11 Encoder Parameters

In the elevator application, the rotary encoder of the motor is indispensable configuration.

Refer to section 4.5 (page 40) for the details of encoder interface card.

F11.00	Encoder interface card selection	1—3【1】

1: ABZ incremental encoder interface card (MT70-PG1-ABZ).

- Only apply to asynchronous motor.

2: UVW encoder interface card (MT70-PG3-UVW).

- Only apply to synchronous motor. When select UVW encoder interface card, you must ensure that the pole number of the encoder is the same as the motor.

3: SINCOS encoder interface card (MT70-PG2-SINCOS).

- Only apply to synchronous motor. It is used to adapt the SINCOS encoder, such as the HEIDENHAIN ERN1387-type SINCOS encoder.

F11.01	Encoder P/R	1—9999【1024】
F11.02	Encoder direction setting	0,1【0】

The effect of changing F11.02 is equivalent to changing the AB two-phase sequence of encoder.

0: The same direction.

1: The reverse direction.

F11.03	Encoder signal filter coefficient	00—99【11】

F11.03 generally does not need to change, if there is obvious current noise during motor running process, it can be appropriately modified.

Units: Low speed of filter coefficient.

Tens: High speed of filter coefficient.

F11.04	Manufacturer debugging parameter, prohibit to change	
F11.05	Detecting time of encoder wire disconnection	0.00—2.00【1.00s】

Define the continuous detection time of encoder wire disconnection fault.

MONT71 detects the encoder wire disconnection and lasts more than the time set by F11.05, it will alarm E0031 fault (encoder disconnection).

- If set F11.05 as 0, the encoder wire disconnection can be detected.

8.2.13 Group F12 Main Control Board Terminal Parameters

F12.01－F12.24 set the functions of input terminal X1－X24 on MCB (MT71-MCB-A);

F12.25－F12.27 set the functions of high voltage input terminal X25－X27 on MCB (MT71-MCB-A);

F12.28－F12.51 set the output functions of relay Y0－Y23 on MCB (MT71-MCB-A).

F12.00	MCB input terminal filter time	2－40【10ms】

Define the MCB input terminal (X1－X24) filter time, used to set the sensitivity of the input terminal.

- As input terminals are vulnerable to interference and cause the malfunction, to increase the value of this parameter setting, but will reduce the sensitivity of the terminals.

F12.01	Function selection of MCB input terminal X1	000－149【3】
F12.02	Function selection of MCB input terminal X2	000－149【104】
F12.03	Function selection of MCB input terminal X3	000－149【105】
F12.04	Function selection of MCB input terminal X4	000－149【109】
F12.05	Function selection of MCB input terminal X5	000－149【10】
F12.06	Function selection of MCB input terminal X6	000－149【11】
F12.07	Function selection of MCB input terminal X7	000－149【12】
F12.08	Function selection of MCB input terminal X8	000－149【14】
F12.09	Function selection of MCB input terminal X9	000－149【115】
F12.10	Function selection of MCB input terminal X10	000－149【116】
F12.11	Function selection of MCB input terminal X11	000－149【117】
F12.12	Function selection of MCB input terminal X12	000－149【118】
F12.13	Function selection of MCB input terminal X13	000－149【119】
F12.14	Function selection of MCB input terminal X14	000－149【22】
F12.15	Function selection of MCB input terminal X15	000－149【126】
F12.16	Function selection of MCB input terminal X16	000－149【28】

F12.17	Function selection of MCB input terminal X17	000－149【30】
F12.18	Function selection of MCB input terminal X18	000－149【24】
F12.19	Function selection of MCB input terminal X19	000－149【0】
F12.20	Function selection of MCB input terminal X20	000－149【0】
F12.21	Function selection of MCB input terminal X21	000－149【0】
F12.22	Function selection of MCB input terminal X22	000－149【0】
F12.23	Function selection of MCB input terminal X23	000－149【0】
F12.24	Function selection of MCB input terminal X24	000－149【0】

Note:

1. X1－X24 are digital input terminals and can select the corresponding function code 000－140, but the same function code can not be reused.

2. Hundreds is set as 0, it indicates the normally open input; if set as 1, it indicates the normally closed input.

0: No function. To set the terminal in a non-functional state, even if there is a signal input, it will not make any action.

- You can set the unused terminal as 0 so as to prevent misconnection or malfunction.

1: Up leveling normally open input (DZU).

2: Down leveling normally open input (DZD).

3: Door zone normally open input (SX1).

- Via the leveling sensor signal to control the elevator leveling parking, and there are two way controls in accordance with different sensors.
- 1: The elevator equipped with up and down leveling sensors, you need these two sensor signals to the corresponding terminal, and the terminal's function is set as up leveling signal input (1 or 101), and down leveling signal input (2 or 102).

  The up operation should successively receive the up leveling signal and then the down leveling signal; and the down operation should successively receive the down leveling signal and then the up leveling signal.
- 2: If the elevator is equipped with one leveling sensor, there are the following two methods:

  ① Connect the leveling sensor signal to the corresponding terminal, the terminal is set to door zone signal (3 or 103), while the up leveling signal function (1/101 set to 0) and the down leveling signal function (2/102 set to 0) have been set to cancel.
  ② Connect the leveling sensor signal to two corresponding terminals, which are set to up leveling signal input (1/101) and down leveling signal input (2/102).
- Please refer to section 4.4 Advanced Open Block (MT70-AOB-A) about the open door re-leveling and advanced open function.

4: Run output feedback normally open input (SW).

5: Brake output feedback normally open input (BZK).

- The system automatically detect that the outputs of run contactor and brake contactor whether are consistent with the feedback signal.
- If inconsistent, it will alarm E0056 fault (run contactor feedback abnormal) and E0057 fault (brake contactor feedback abnormal).

6: Brake limit switch feedback normally open input (BZK1).

- Use for detecting the actual action of brake. If the actual action is inconsistent with the brake output, it will alarm E0057 fault (brake contactor feedback abnormal).

7: Synchronous motor self-locking feedback normally open input (FX).

- The system automatically detects whether the synchronous star-delta contactor output is consistent with the feedback signal. If not, it will alarm E0054 fault (synchronous motor star-delta contactor feedback abnormal).

8: Locked door output feedback normally open input (FMFB).

- When the elevator opens the door in advance or re-leveling jumps out door lock after opening the door, it will detect locked-door feedback signal for insuring the elevator safely running.
- The system automatically detects whether the locked-door output is consistent with the feedback signal. If not, it will alarm E0047 fault (locked-door feedback abnormal).

9: Inspection normally open input (INS).

10: Inspection up normally open input (UP).

11: Inspection down normally open input (DN).

- Turn the auto/inspection switch to inspection, the elevator enters to inspection mode and the INS lamp of main control board will become lighting.
- At the inspection mode, the system will not operate automatically (including the automatic door). When there is inspection up signal or inspection down signal, the elevator will run at inspection speed (F04.00).

12: Fire signal normally open input (FIRS1).

- When the “fire” switch is open, the elevator comes into fire state.
- At this mode, the system will cancel all entered hall call and car call; the elevator will park at the next station without opening the door. Elevator directly runs to the fire station and won’t open door for setting passengers free until arriving at the fire station.

13: Reserved.

14: Locked-elevator normally open input (LOCK).

- It is the locked-elevator signal input point, and if this signal is valid, the system enters into locked-elevator state.

15: Up limit normally open input (LSU).

16: Down limit normally open input (LSD).

- No. 15 and No. 16 functions are terminal stopping switches for preventing car and counterweight rest when the elevator passed the leveling station of landing without stopping.

17: Up forced Dec normally open input (ULS1).

18: Down forced Dec normally open input (DLS1).

- During the shaft self-learning process, MONT71 will record these switch positions to F19.12 and F19.13.

19: Over load normally open input (LWD).

- If the elevator loading is over 110% of rated load, the system comes into over loading state.
- The over loading buzzer tweets, the car light of over loading will light and the elevator will not close the door.
- In the elevator checking course, if the system need run with 110% over loading, it can set Bit2 of F25.04 as 1 (enabled over-load run).

20: Full load normally open input (LWX).

- The elevator loading among 80－110% of elevator rated load (F00.04) is full loading state.
- In the full loading state, the hall shows full loading, the elevator doesn't response the hall call.

21: Safety circuit 1 normally open input (JT1).

22: Front door OD arrival normally open input (OLT1).

23: Back door OD arrival normally open input (OLT2).

24: Front door CD arrival normally open input (CLT1).

25: Back door CD arrival normally open input (CLT2).

26: Front door light curtain normally open input (EDP1).

27: Back door light curtain normally open input (EDP2).

Pay attention to No. 22—27 functions: when there is only one door, it defaults that it is front door.

28: Driver signal normally open input (ATS).

29: Direct arrival signal normally open input (NSB).

30: Commutation signal normally open input (ACB).

31: Isolated run signal normally open input (ISS).

32: Front/back door switch normally open input (GABS).

- When the internal call arrives, this terminal is disabled, and it opens the front door; but if enabled, it will open the back door.
- Set F26.21 as 1 (open-through door control opens), set F22.17 as 2 (open-through door control mode 2), the No. 32 function will be enabled. Refer to section 9.2.2 Open-through Door Description (page 205).

33: Battery-driven normally open input (UPC).

- The normally open input using for the power failure emergency run whether is valid, you can refer to the section 9.2.1 (page 201) about details.

34: OD button normally open input (DOB1).

35: CD button normally open input (DCB1).

36: Safety circuit 2 normally open input (JT2).

37: Door locked circuit 1 normally open input (DLC1).

38: Door locked circuit 2 normally open input (DLC2).

- The safety circuit and the door locked circuit are enabled, which is an essential condition for elevator operation.
- **Safety circuit (No. 21 and No. 36 functions):** It is an important guarantee of the elevator safe and reliable operation. If select two safety circuit input points but any of them is broken off, it will alarm E0041 fault (safety circuit disconnection).
- **Door locked circuit (No. 37 and No. 38 functions):** It ensures that the hall door and the car door have closed at the elevator starting running. The function of door lock 2 is the same with that of door lock 1, that may handle hall door and car door signals separately. Two door locked signals are simultaneously connected to system before believe that the locks closed, otherwise alarm E0042 fault (door locked disconnection during running).

Note:

1. No. 21 function and No. 36 function can use with the high voltage safety circuit signal. If using with the high voltage safety circuit, and detect that all safety circuits are valid, it will believe that the safety circuits pass, otherwise will alarm E0041 fault (safety circuit disconnection).

2. No. 37 function and No. 38 function can use with the high voltage door locked signal. If that, and detect the preset door lock signal circuits all turned on, it will believe the door lock closing. After door lock has closed, the LOCK lamp of MCB will become lighting.

39: Half-load signal normally open input (HALFLOAD).

40: Fireman normally open input (FIRS2).

- The fireman switch input is used for fireman to run the elevator (twice fire control). At the fire back to base station, MONT71 will get into the fireman running state if there's fireman signal.

41: Motor over-heated normally open input (MT).

42: Earthquake monitoring switch normally open input (EQ).

43: Edges feedback for front door normally open input (EDK1).

44: Edges feedback for back door normally open input (EDK2).

45: Brake forced feedback normally open input (KMZ).

46: Back door prohibition normally open input.

47: Alarm bell normally open input.

48, 49: Reserved.

F12.25	Function selection of MCB high voltage input terminal X25	0—99【1】
F12.26	Function selection of MCB high voltage input terminal X26	0—99【2】
F12.27	Function selection of MCB high voltage input terminal X27	0—99【3】

0: No function.

1: High voltage safe circuit signal (JT).

2: High voltage locked door 1 signal (DS1).

3: High voltage locked door 2 signal (DS2).

4—99: Reserved.

F12.28	Output function selection of MCB relay Y0	0—32【0】

F12.29	Output function selection of MCB relay Y1	0—5【1】
F12.30	Output function selection of MCB relay Y2	0—5【2】
F12.31	Output function selection of MCB relay Y3	0—5【4】
F12.32	Output function selection of MCB relay Y4	0—5【0】
F12.33	Output function selection of MCB relay Y5	0—5【0】

F12.34	Output function selection of MCB relay Y6	6—31【6】
F12.35	Output function selection of MCB relay Y7	6—31【7】
F12.36	Output function selection of MCB relay Y8	6—31【8】
F12.37	Output function selection of MCB relay Y9	6—31【9】
F12.38	Output function selection of MCB relay Y10	6—31【10】
F12.39	Output function selection of MCB relay Y11	6—31【11】
F12.40	Output function selection of MCB relay Y12	6—31【12】
F12.41	Output function selection of MCB relay Y13	6—31【13】
F12.42	Output function selection of MCB relay Y14	6—31【0】
F12.43	Output function selection of MCB relay Y15	6—31【0】
F12.44	Output function selection of MCB relay Y16	6—31【25】
F12.45	Output function selection of MCB relay Y17	6—31【17】
F12.46	Output function selection of MCB relay Y18	6—31【13】
F12.47	Output function selection of MCB relay Y19	6—31【19】
F12.48	Output function selection of MCB relay Y20	6—31【20】
F12.49	Output function selection of MCB relay Y21	6—31【21】
F12.50	Output function selection of MCB relay Y22	6—31【22】
F12.51	Output function selection of MCB relay Y23	6—31【0】

Note:

1. The setting range of F12.28 (Y0) is 0 − 32.

2. The setting range of F12.29 − F12.33 (Y1 − Y5) is 0 − 5.

3. The setting range of F12.34 − F12.51 (Y6 − Y23) is 6 − 31.

0: No function. To set the terminal in a non-functional state and can not make any action.

1: Run contactor output (SW).

- The system outputs the run contactor's pick-up and release commands; controls the run contactor's pick-up and release.

2: Brake contactor output (BZK).

- The system outputs the brake contactor's pick-up and release commands so as to achieve the pick-up and release control of brake.

3: Synchronous star-delta contactor output (FX).

- The system outputs the pick-up and release command of run contactor; control the pick-up and release of synchronous star-delta contactor.
- It can be set by F26.19.
- The synchronous star-delta contactor can guarantee that the elevator does not occur high-speed car rolling even in the case of the brake failure.

4: Brake forced output (KMZ).

- Each time, opening the brake and lasting 4s can be used to control the starting voltage of the brake.

5: Lighting and fan output (FAN). There will be lighting output if meet any one of the following conditions; but there will be no output at other conditions.

- 1. Inspection running.
- 2. There is running direction.
- 3. There is fault.
- 4. The door machine is opening or keeping opening state.
- 5. There is floor registration in car.

6: Front door open output (OD1).

7: Front door close output (CD1).

8: Back door open output (OD2).

9: Back door close output (CD2).

- When there is only one door, it defaults that it is front door.

10: Low 7-segment code display output a.

11: Low 7-segment code display output b.

12: Low 7-segment code display output c.

13: Low 7-segment code display output d.

14: Low 7-segment code display output e.

15: Low 7-segment code display output f.

16: Low 7-segment code display output g.

17: Up arrow display output.

18: Down arrow display output.

19: Minus display output.

20: Firefighting back to base station output.

21: Buzzer output (BUZ). The conditions of buzzer output are as follows.

- 1. To remind for the excessive position deviation back to base station.
- 2. To remind for there is hall call information at driver mode.
- 3. To remind for elevator over-loaded.
- 4. To remind for battery-driven running.
- 5. To remind for forced close door.
- 6. To remind for firefighting back to base station.

22: Over load output (LWD).

23: Arrival chimes output.

24: Full load output (LWX).

25: Inspection output.

26: Fan and light output 2 (FAN2).

- Refer to No. 5 function.

27: Locked door contactor output (FM).

- The system outputs the pick-up and release command of locked door contactor so as to achieve the locked-door jump out and release control at advanced open and OD re-leveling.

28: High bit output of BCD code, Gray code, and seven-segment code.

29: Integrated run correctly output.

30: Elevator up run output.

31: Elevator down run output.

32: Power failure emergency run is enabled (UPC).

8.2.14 Group F13 Main Control Board L-Terminal Parameters

F13.01－F13.24 set functions of main control board (MT71-MCB-A) input terminal L1－L24;

F13.00	Input filter settings	2－40【10ms】

It defines the input filter time of MCB L-terminals (L1－L24) used to set the sensitivity of the input terminals.

- As input terminals are vulnerable to interference and cause the malfunction, to increase the value of this parameter setting, but will reduce the sensitivity of the terminals.

F13.01	Function selection of MCB terminal L1	000－339【201】
F13.02	Function selection of MCB terminal L2	000－339【202】
F13.03	Function selection of MCB terminal L3	000－339【203】
F13.04	Function selection of MCB terminal L4	000－339【0】

F13.05	Function selection of MCB terminal L5	000－339【211】
F13.06	Function selection of MCB terminal L6	000－339【212】
F13.07	Function selection of MCB terminal L7	000－339【213】
F13.08	Function selection of MCB terminal L8	000－339【214】

F13.09	Function selection of MCB terminal L9	000－339【215】
F13.10	Function selection of MCB terminal L10	000－339【0】
F13.11	Function selection of MCB terminal L11	000－339【0】
F13.12	Function selection of MCB terminal L12	000－339【0】

F13.13	Function selection of MCB terminal L13	000－339【221】
F13.14	Function selection of MCB terminal L14	000－339【222】
F13.15	Function selection of MCB terminal L15	000－339【223】
F13.16	Function selection of MCB terminal L16	000－339【224】

F13.17	Function selection of MCB terminal L17	000－339【232】
F13.18	Function selection of MCB terminal L18	000－339【233】
F13.19	Function selection of MCB terminal L19	000－339【234】
F13.20	Function selection of MCB terminal L20	000－339【235】

F13.21	Function selection of MCB terminal L21	000－339【0】
F13.22	Function selection of MCB terminal L22	000－339【0】
F13.23	Function selection of MCB terminal L23	000－339【0】
F13.24	Function selection of MCB terminal L24	000－339【0】
F13.25 F13.26	Manufacturer debugging parameter, prohibit to change	

0：No function. To set the terminal in a non-functional state, it will not make any action even if there is a signal input.

- You can set the unused terminal as zero so as to prevent misconnection or malfunction.

Note: The 10th floor does not have up call, and the 1st floor does not have down call.

201: Front door OD button	301: Back door OD button
202: Front door CD button	302: Back door CD button
203: Front door OD delay button	303: Back door OD delay button
204: Two doors select button input	
205: Back door prohibited switch normally open input	

210: 10th floor of front door internal call	310: 10th floor of back door internal call
211: 1st floor of front door internal call	311: 1st floor of back door internal call
212: 2nd floor of front door internal call	312: 2nd floor of back door internal call
213: 3rd floor of front door internal call	313: 3rd floor of back door internal call
214: 4th floor of front door internal call	314: 4th floor of back door internal call
215: 5th floor of front door internal call	315: 5th floor of back door internal call
216: 6th floor of front door internal call	316: 6th floor of back door internal call
217: 7th floor of front door internal call	317: 7th floor of back door internal call
218: 8th floor of front door internal call	318: 8th floor of back door internal call
219: 9th floor of front door internal call	319: 9th floor of back door internal call

221: 1st floor of front door up call	321: 1st floor of back door up call
222: 2nd floor of front door up call	322: 2nd floor of back door up call
223: 3rd floor of front door up call	323: 3rd floor of back door up call
224: 4th floor of front door up call	324: 4th floor of back door up call
225: 5th floor of front door up call	325: 5th floor of back door up call
226: 6th floor of front door up call	326: 6th floor of back door up call
227: 7th floor of front door up call	327: 7th floor of back door up call
228: 8th floor of front door up call	328: 8th floor of back door up call
229: 9th floor of front door up call	329: 9th floor of back door up call

230: 10th floor of front door down call	330: 10th floor of back door down call
232: 2nd floor of front door down call	332: 2nd floor of back door down call
233: 3rd floor of front door down call	333: 3rd floor of back door down call
234: 4th floor of front door down call	334: 4th floor of back door down call
235: 5th floor of front door down call	335: 5th floor of back door down call
236: 6th floor of front door down call	336: 6th floor of back door down call
237: 7th floor of front door down call	337: 7th floor of back door down call
238: 8th floor of front door down call	338: 8th floor of back door down call
239: 9th floor of front door down call	339: 9th floor of back door down call

F13.27	**Output logic setting 1**	**0—65535【0】**
F13.28	**Output logic setting 2**	**0—255【0】**

The value of F13.27 is 16-bit binary data. Bit0 is corresponding to MCB terminal L0, and Bit15 is corresponding to terminal L16.

The value of F13.28 is 10-bit binary data. Bit0 is corresponding to MCB terminal L7, and Bit9 is corresponding to terminal L24..

- Any bit is set as 1: output logic is negated.
- Any bit is set as 0: output logic is normal.

8.2.15 Group F14 Communication Parameters

F14.00	Data format	0—5【0】

0: 1-8-2 format, no parity, RTU.

1: 1-8-1 format, even parity, RTU.

2: 1-8-1 format, odd parity, RTU.

3: 1-7-2 format, no parity, ASCII.

4: 1-7-1 format, even parity, ASCII.

5: 1-7-1 format, odd parity, ASCII.

F14.01	Baud rate selection	0—5【3】

0: 1200bps.

1: 2400bps.

2: 4800bps.

3: 9600bps.

4: 19200bps.

5: 38400bps.

F14.02	Local address	0—247【2】

When F14.02 = 0, it represents the broadcast address.

F14.03	Host PC response time	0—1000【0ms】

8.2.16 Group F15 Panel Display Parameters

F15.00	LCD panel language	0,1【0】

0: Chinese.

1: English.

F15.01	LCD panel display contrast	1—8【6】

Select the LCD display contrast.

F15.02	Small panel display direction	0—3【0】

There are three LED digital tubes on the main control board (MT71-MCB-A) of MONT71.

Changing the direction of the digital tube display in accordance with F15.02 is convenient to check and can facilitate the control cabinet design regardless of the MCB installation from positive and negative.

- Positive display: The setting at positive installation of the MCB.
- Reverse display: The setting at negative installation of the MCB.
- Physical floor: The Group F0 data of small panel display is physical floor.
- Hall call data: The Group F0 data of small panel display is hall call data.

0: Positive display, physical floor.

1: Reverse display, physical floor.

2: Positive display, hall call data.

3: Reverse display, hall call data.

Note: Setting F15.02 as the physical floors or the hall call data can make the same effect to panel display floor.

F15.03	Run display parameter 1 setting	0—9【2】
F15.04	Run display parameter 2 setting	0—9【3】
F15.05	Run display parameter 3 setting	0—9【6】
F15.06	Run display parameter 4 setting	0—9【0】
F15.07	Run display parameter 5 setting	0—9【0】
F15.08	Run display parameter 6 setting	0—9【0】

F15.09	Stop display parameter 1 setting	0—9【2】
F15.10	Stop display parameter 2 setting	0—9【0】
F15.11	Stop display parameter 3 setting	0—9【7】
F15.12	Stop display parameter 4 setting	0—9【0】
F15.13	Stop display parameter 5 setting	0—9【0】
F15.14	Stop display parameter 6 setting	0—9【0】

Define that the panel displays the state parameter at running or stopping.

- Cyclically display via the ◀ key or ▶ key of panel.
- **Such as:** When set F15.09 as 2, the stop display parameter is feedback speed at initial power.

0: Reserved.

1: Preset speed.

2: Feedback speed.

3: Output frequency.

4: Running RPM.

5: Output voltage.

6: Output current.

7: DC bus voltage.

8: AI input voltage.

- When F05.01=1 (analogue weighing), display the analogue input voltage of MCB.

9: Present height.

8.2.17 Group F16 Enhance Function Parameters

F16.00	Current keep time after stop command	0—1500【300ms】

To eliminate the synchronous motor current noise at stop, when the brake is over, the cut-off run signal will reduce the current to zero after some time.

- F16.00 setting time is the time reduced from motor rated current to zero.
- It needs to use with F02.05 (zero-speed retention time at stop).

F16.01	Fan control mode	0—2【0】

Define the fan control mode of MONT71.

- If alarm E0009 fault (heatsink overheated), the fan will run all the time.

0: Auto stop.

- The fan runs all the time in the running state. The fan will auto stop after the time set by F16.02.

1: Immediately stop.

- The fan runs all the time in running state, when stops running, the fan will immediately stop.

2: Always run when power on.

Note: At the inspection mode, if the controller has fault, the fan will immediately stop; if no fault, the fan will run all the time.

At inspection mode the fan operation can judge whether there is the fault on-site.

F16.02	Fan control keep time	0.0—600.0【300.0s】
F16.03	Braking unit action voltage	360—750V 【Depend on model】

For 380V voltage class, the braking voltage range is 630—750V and the factory setting is 【720V】.

For 220V voltage class, the braking voltage range is 360—400V and the factory setting is 【380V】.

Note: Only in the controller running state, the braking action is enabled.

F16.04	Contactor fault detect time	0.3—2.0【1.0s】

Define the fault detected time of output contactor, brake contactor, synchronous star-delta contactor and brake forced contactor.

F16.05	Fault shield	0—65535【0】

Bit0: E0038 and E0039 fault shield

0: No shield for E0038 and E0039.

1: Shield for E0038 and E0039.

Bit1: E0024 fault shield

0: No shield for E0024.

1: Shield for E0024.

Bit2: E0058 fault shield

0: No shield for E0058.

1: Shield for E0058.

Bit3: E0059 fault shield

0: No shield for E0059.

1: Shield for E0059.

Bit4: E0045 fault shield

0: No shield for E0045.

1: Shield for E0045.

Bit5—Bit15: Reserved

F16.06	Manufacturer debugging parameter, prohibit to change	

F16.07	Elevator manufacturers choose	0—999【0】
F16.08	Kinds of elevator parameter selection	0—99【0】

F16.09—F16.24	Manufacturer debugging parameter, prohibit to change	

8.2.18 Group F17 Fault Protect Parameters

Input and output phase loss of fault (F17.00 – F17.03)

F17.00	The detect base of lack of input	0—100【30%】
F17.01	The detect time of lack of input	0.0—5.0【1.0s】

F17.00 setting value is a percentage of MONT71 rated voltage.

When detect certain input voltage without hitting the preset detect base (F17.00) and exceed the preset detect time (F17.01), it will alarm E0015 fault (lack of input).

- When F17.00 or F17.01 is set as 0 or in the battery driven run mode, it does not detect the input phase loss fault.

F17.02	The detect base of lack of output	0—100【20%】
F17.03	The detect time of lack of output	0.0—20.0【3.0s】

F17.02 setting value is a percentage of MONT71 rated current.

When detect certain output current without hitting the preset detect base (F17.02) and exceed the preset detect time (F17.03), it will alarm E0016 fault (lack of output).

- When F17.02 or F17.03 is set as 0, it does not detect the output phase loss fault.

Motor over-loaded fault (F17.04)

F17.04	Motor overload protect factor	20.0—110.0【100.0%】

The motor overload protection factor can be set as 100% when MONT71 drives a motor with the same power class.

To protect the motor when the motor power is smaller than the standard matched power, you need to set a proper motor overload protect factor (F17.04). The factor can derive from the following formula.

For asynchronous motor:

$$\text{Motor overload protect factor (F17.04)} = \frac{\text{Asynchronous motor rated current(F07.02)}}{\text{MONT71 rated current（D00.02）}} \times 100\%$$

For synchronous motor:

$$\text{Motor overload protect factor (F17.04)} = \frac{\text{Synchronous motor rated current(F10.03)}}{\text{MONT71 rated current（D00.02）}} \times 100\%$$

Fault reset function and fault relay action (F17.05 – F17.07)

This function can auto reset the fault in the running state in accordance with the preset times (F17.05) and interval (F17.06).

The auto reset function of faults is as following:

E0001: Controller output Acc overcurrent	E0003: Controller output constant speed overcurrent	E0005: DC bus voltage Dec overvoltage
E0002: Controller output Dec overcurrent	E0004: DC bus voltage Acc overvoltage	E0006: DC bus voltage constant speed overvoltage

F17.05	**Fault auto reset times**	**0—100【0】**
F17.06	**Fault auto reset interval**	**2.0—20.0【5.0s/times】**

When F17.05 = 0, it means “auto reset” is disabled.

- If no other fault is detected within 5 minutes, the auto reset count will be automatically cleared.
- On condition of external fault reset, auto reset count will be cleared.

F17.07	**Fault relay action select**	**00—11【00】**

Bit0: During auto reset:

- 0: Fault relay doesn’t act.
- 1: Fault relay acts.

Bit1: During under voltage

- 0: Fault relay doesn’t act.
- 1: Fault relay acts.

Bit2—Bit3: Reserved

Note: It need preset the MCB relay (F12.34 – F12.51) as No. 29 function (integrated run correctly output).

Fault record (F17.08 – F17.21)

These parameters record the elevator's recent 11 fault codes, elevator floor where the fault occurs, and fault time. The fault information is composed of four bits, the high two bits represent the elevator floor where the fault occurred, and the low two bits represent the fault type.

For example: F17.08 recording the value of 0501 indicates that the farthest time fault is Acc overcurrent fault, and the fault floor is Floor 5th.

Fault type, meaning and countermeasure refer to Chapter 10 Troubleshooting (page 213).

F17.08	No. 1 fault type (the farthest time)	【Actual value】
F17.9	No. 2 fault type	
F17.10	No. 3 fault type	
F17.11	No. 4 fault type	
F17.12	No. 5 fault type	
F17.13	No. 6 fault type	
F17.14	No. 7 fault type	
F17.15	No. 8 fault type	
F17.16	No. 9 fault type	
F17.17	No. 10 fault type	

F17.18	The most recent fault type	【Actual value】
F17.19	The most recent running speed at faulty	
F17.20	The most recent DC bus voltage at faulty	
F17.21	The most recent output current at faulty	

8.2.19 Group F18 PWM Control Parameters

F18.00	Carrier frequency	1－16kHz【Depend on model】

Define the carrier frequency of MONT71 output PWM wave.

The F18.00 value is is closely related to the motor running noise. Generally set above 6 kHz, you can achieve quiet operation.

MONT71 power class	Setting range	Factory setting
0.2－22kW	1－16kHz	8kHz
30－45kW	1－12kHz	6kHz

- The greater F18.00 is, the lower the loss and temperature in the motor is, but the larger the system loss and interference is, and the higher the temperature is.
- The smaller F18.00 is, the higher the loss and temperature in the motor is, and the greater the higher harmonic component of the output current is.
- When the value of F18.00 is higher than the factory setting, MONT71 should be derated by 5% when per 1 kHz is increased compared to the factory setting.

F18.01	Carrier frequency auto adjust enable	0,1【0】

0: Disable the carrier frequency auto adjustment.

1: Enable the carrier frequency auto adjustment.

F18.02	PWM over-modulation enable	0,1【1】

0: The over-modulation is disabled.

1: The over-modulation is enabled.

F18.03	PWM modulation mode	0,1【1】

0: Two phase modulation and three phase modulation switch.

1: Three phase modulation.

8.2.20 Group F19 Distance Control Parameters

F19.00	Total floor	2—10【5】

Define the total number of floors.

F19.01	Present floor	1—F19.00【1】

Define the present physical floor of car.

- The system can automatically change F19.01 when elevator is running. And the system can automatically revise F19.01 after the up or down forced deceleration switch is touching off.
- When elevator is in non-bottom or non-top floor (up/down leveling signal is valid), users can manually change F19.01. But this parameter must accord with the present floor.

F19.02	Present height	0.00—299.99【0.00m】

Define the number of pulse that the present floor relative to the lowest leveling floor.

F19.03	Leveling distance adjustment / Parking allowance of distance control	0—60【30mm】

MONT71 have built-in advanced distance control algorithm, and use a variety of ways to ensure direct parking stability, generally need not be adjusted.

- F19.06 = 0 (direct parking mode 0), F19.03 is the leveling distance adjustment; changing F19.03 can adjust the elevator leveling accuracy.
  - If elevator is over leveling when stops, reduce the value of F19.03. If elevator is under leveling when stops, increase it.
- F19.06 = 1 (direct parking mode 1), F19.03 is the parking allowance of distance control.
  - Increase F19.03, the creeping distance will increase; reduce F19.03, the creeping distance will reduce.
  - If elevator is over leveling when stops, increase the F03.13 (stop Dec jerk); if elevator is under leveling, reduce it.

F19.04	Leveling position correction coefficient	0—500【0mm】

This parameter is related with the length of leveling plate, but not the actual length of leveling plate.

- It is noted when shaft self-learning, the user need not change.
- The data such as the length of leveling plate can be checked via D05.06—D05.08.

F19.05	Dec point through output adjustment	0.050—2.000【0.250s】

This is the distance control internal deceleration signal, which need not be changed by users.

F19.06	Direct parking selection	0,1【0】

Define the direct parking mode of elevator.

0: Direct parking mode 0 (without creep).

- To the principle of distance, automatically generate a smooth curve from start to park, no creep, directly stops in leveling position.

1: Direct parking mode 1 (with creep).

- To the principle of distance, automatically generate a smooth curve from start to park, with creep distance of 30mm (F19.03), decelerates at F03.13 (stop Dec jerk) and stops in the leveling position when encounters the leveling signal.
- Refer to the figure of F03.13 for the detail.

F19.07	Highest speed of curve 1	0.000－F00.02【0.000m/s】
F19.08	Highest speed of curve 2	0.000－F00.02【0.000m/s】
F19.09	Highest speed of curve 3	0.000－F00.02【0.000m/s】
F19.10	Highest speed of curve 4	0.000－F00.02【0.000m/s】
F19.11	Highest speed of curve 5	0.000－F00.02【0.000m/s】

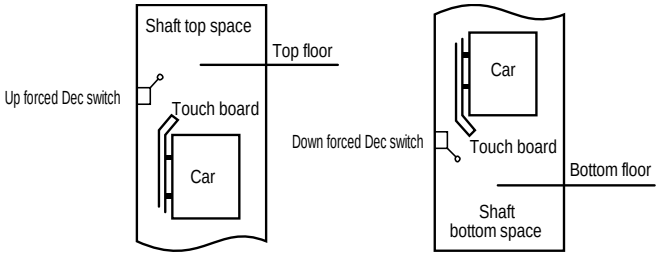
After the shaft self-learning, the system will generate a running speed curve of F19.07－F19.11 in accordance with the floor data and the elevator max running speed (F00.02) etc.

Users also can change manually: general Curve 1 is set to single-floor speed, Curve 2 is set to double-floor speed, and Curve 3 is set to 3-floor speed, then the others need not to set.

F19.12	Up forced Dec position	0.00—300.00【0.00m】
F19.13	Down forced Dec position	0.00—300.00【0.00m】

F19.12—F19.13 define that forced deceleration switches are relative to the position of the bottom leveling floor, which can be automatically recorded during shaft self-learning process.

- MONT71 can set one pairs of switches of forced deceleration at elevator. As following figure.



- The installation position of forced deceleration switch is as following table.
  - S is the installing distance between forced deceleration switch and station leveling position, decelerates to zero according to F03.12 (forced Dec speed), which should meet the below condition.

$$S > \frac{V^2}{2 \times F03.12}$$

Elevator rated speed	Distance between the forced Dec switch and station
V≤1.5m/s	1.5m

- The system can automatically monitor the instant running speed when elevator runs to the forced deceleration switch. If detect the abnormal speed or position, the system will forcedly decelerate at F03.12 (forced Dec speed) to avoid climbing or plunging elevator.
- If the distance of forced deceleration is too short, the elevator will alarm E0060 fault (forced Dec and distance is too short) after completes shaft self-learning, which can be solved through adjusting the installing position of forced deceleration switch or increasing the parameter F03.12 (forced Dec speed).

F19.14—F19.17	Manufacturer debugging parameter, prohibit to change	

8.2.21 Group F20 Storey Height Parameters

F20.00	High bit of storey 1	0—50000【0】
F20.01	Low bit of storey 1	0—50000【0】

Define the height from the first floor to the second floor. Unit: Pulse number.

- **The storey height is :**
  - 50000 × F20.00 + F20.01.

F20.02	High bit of storey 2	0—50000【0】
F20.03	Low bit of storey 2	0—50000【0】
……	……	0—50000【0】
F20.14	High bit of storey 8	0—50000【0】
F20.15	Low bit of storey 8	0—50000【0】

Define the height from the present floor N to floor N + 1.

- **The relationships of high/low bit of storey N and the parameter number are:**
  - Parameter number of storey high bit = 2N – 2;
  - Parameter number of storey low bit = 2N – 1.
- **The storey height is:**
  - 50000 × High bit of storey + Low bit of storey.

F20.16	High bit of storey 9	0—50000【0】
F20.17	Low bit of storey 9	0—50000【0】

Define the height from the 9th floor to the 10th floor. Unit: Pulse number.

- **The storey height is:**
  - 50000 × F20.16 + F20.17.

8.2.22 Group F21 Elevator Parameters

F21.00	Parking base station	1—F19.00【1】

Define the elevator will automatically return to the physical floor when the elevator idle time is excess F23.00 (free return base station time).

F21.01	Fire base station	1—F19.00【1】

Define the elevator will return to the physical floor when the elevator enters the fire back base station of running mode.

F21.02	Locked-elevator base station	1—F19.00【1】

Entering the locked-elevator mode, the elevator will return to the physical floor after responds the manipulator command.

F21.03	Service floor	0—1023【1023】

Define the floor that the elevator can serve.

Bit0 is corresponding to the physical first floor, and Bit10 is corresponding to the tenth floor.

- Any bit is set as 1: The corresponding floor is the service floor and allowing to park.
- Any bit is set as 0: The corresponding floor is the non-service floor and not allowing to park. This floor cannot register the calling elevator command.

Note: The LCD panel will automatically display the significance of each binary number which only needs to be set, and therefore it need not convert all binary numbers into decimal numbers.

8.2.23 Group F22 Door Machine Parameters

F22.00	Door machine number	1,2【1】

Define the door machine number. Please set this parameter in accordance with the actual door machine number used by the elevator.

- When the elevator only has one door, the door will default as the front door. When the elevator has two doors, the doors will be divided into front door and back door.

F22.01	Front door service floor	0—1023【1023】

Define the physical floor of front door service.

- Any bit is set as 1: The front door of corresponding floor can normally open and close.
- Any bit is set as 0: Disable the front door of corresponding floor to open door.

Note:

1. The settings of F22.01 should not conflict with the settings of F21.03, the user must ensure that the elevator door machine service floor (F21.03) is the system service floor!

2. The LCD panel will automatically display the significance of each binary number which only needs to be set, and therefore it need not convert all binary numbers into decimal numbers.

F22.02	Back door service floor	0—1023【1023】

Define the back door service floor.

- Refer to parameters F22.01 for details.

Note:

1. The back door service will be valid when F22.00 = 2.

2. The LCD panel will automatically display the significance of each binary number which only needs to be set, and therefore it need not convert all binary numbers into decimal numbers.

F22.03	OD time protection	5—99【10s】
F22.04	CD time protection	5—99【15s】
F22.05	Limited times of OD/CD overtime	0—20【0】

Outputting OD/CD command and after the setting time of F22.03 (OD) / F22.04 (CD), the system does not receive the OD/CD arrival feedback signal yet, the elevator will immediately turn to close / open the door, which is the switching gate one time.

- When OD/CD number of times is consistent with the setting of F22.05, it will alarm E0048 fault (OD fault)/ E0049 fault (CD fault).
- When F22.05 = 0, no OD/CD time protection. If no OD/CD arrival signal is received during the system OD/CD process, it will continue to open door/close door.

F22.06	OD/CD torque holding	0—4【3】

Define the system selection of torque holding during elevator opening/closing the door.

0: Without OD/CD torque holding.

1: With OD torque holding.

2: With CD torque holding.

3: With OD/CD torque holding.

4: During running process with CD torque holding.

F22.07	Hall call OD holding time	1—30【5s】
F22.08	Internal call OD holding time	1—30【3s】

F22.07 defines the time of holding open door with hall call but without internal call.

F22.08 defines the time of holding open door with internal call.

- If there is CD command input within the OD holding time, the CD command will be immediately responded.

F22.09	Door state at waiting elevator	0—2【0】

Define the elevator door state at spare time.

0: Normal closes the door.

1: Base station OD waiting elevator.

2: Each floor OD waiting elevator.

F22.10	Holding time for base station OD	1—30【10s】
F22.11	Delay time of OD holding	10—1000【30s】

F22.10 defines the holding OD time after the elevator arriving to the base station.

F22.11 defines the elevator holding OD time when there is OD delay signal input.

- If there is CD command input within the setting time, the CD command will be immediately responded.

F22.12	Manufacturer debugging parameter, prohibit to change	
F22.13	Open-through door control mode	0—3【0】

Define the open-through door control modes. Refer to section 9.2.2 Open-through Door Description (page 205) for details.

0: Open-through door control mode 0.

1: Open-through door control mode 1.

2: Open-through door control mode 2.

3: Open-through door control mode 3.

8.2.24 Group F23 Time Parameters

F23.00	Free return base station time	0—240【10min】

Define that the elevator automatically returns to parking base station after F23.00 setting time without internal call, hall call or any other call.

- Set F23.00 as 0, not back to base station.

F23.01	Delay time of close lighting and fan	0—240【2min】

Define that the elevator automatically cut off the car lighting and fan power in automic state without running command and after F23.01 setting time.

- Set F23.01 as 0, no close delay function.

F23.02	Largest floors run interval	0—45【45s】

When elevator running time is over the F23.02 setting time at border upon floors and there is no leveling signals, elevator will alarm E0040 fault (elevator run timeout).

- If the setting value of F23.02 is smaller than 3s, no protection.

8.2.25 Group F24 Display Parameters of Floor Information

F24.00	Collective mode	0—2【0】

0: Full collective. The elevator responds the up and down running call outside the hall.

1: Up collective. The elevator responds the up running call outside the hall but not responds the down running call.

2: Down collective. The elevator responds the down running call outside the hall but not responds the up running call.

F24.01	Floor 1 display	0000—1999【1901】
F24.02	Floor 2 display	0000—1999【1902】
……	……	0000—1999【……】
F24.09	Floor 9 display	0000—1999【1909】
F24.10	Floor 10 display	0000—1999【0100】

Define the display content of outside hall and inside car display board of corresponding floor.

- The settings are consisted by four bits, two high bits represent tens of floors and two low bits represent units of floors.
- The meanings of high and low bits of setting are as following table:

Such: The 10th floor displays 10, F24.10 = 0100; the first floor displays -1, F24.01=1001.

Setting value	Display	Setting value	Display
00	0	06	6
01	1	07	7
02	2	08	8
03	3	09	9
04	4	10	-
05	5	11—99	No display

F24.11	Hall call output selection	0—3【1】

0: Seven-segment code.

1: BCD code.

2: Reserved.

3: Binary code.

8.2.26 Group F25 Test Running Parameters

Group F25 parameters are especially enacted for elevator adjustment. The setting of parameters won't be saved after power failure, and it will return to default.

Note:

Group F25 can only be set by the professional person, which should be with caution. Otherwise the resulting consequences are undertaken by the persons who set up on their own, hereby declare. Please make sure that each parameter of Group 25 is set as zero during the elevator normal operation.

F25.00	**Test floor 1**	**0—F19.00【0】**
F25.01	**Test floor 2**	**0—F19.00【0】**
F25.02	**Test floor 3**	**0—F19.00【0】**

Define the target floor when the elevator is in testing operation.

- F25.00—F25.02 are the same with the internal call commands. The command is durative availability until code is set to 0 instead or power is failure.
- Set as 0, no testing floor.

F25.03	**Test times**	**0—60000【0】**

F25.03 defines the testing operation times.

- Set as 60000, it will run all the time. When set as other value, the elevator will not stop testing operation until the running times reach the setting value.

F25.04	**Special test parameter**	**0—65535【0】**

Bit0: Hall call enable

0: Enabled hall call.

1: Disabled hall call. The MCB does not communicate with HCB, the hall call elevator signal is invalid and the HCB displays E52.

Bit1: OD enable

0: Enabled OD. The OD/CD buttons are normal.

1: Disabled OD. The OD/CD buttons are un-useful and doors don't automatically open.

Bit2: Over-load enable

0: Disabled over-load.

1: Enabled over-load. After the elevator reaches the over-load and there is no over-loaded protection, it will run in accordance with the full load state.

Bit3: Limitation enable

0: Enabled limitation.

1: Disabled limitation. It only can be used in detecting the limitation switch.

Bit4: Random run enable

0: Disabled random run.

1: Enabled random run. According to the internal random function, the controller can randomly assign the hall call registration command between the first floor and the highest floor.

Bit5—Bit15: Reserved

8.2.27 Group F26 Elevator Function Selections

F26.00	Call elevator floor setting	0—F19.00【0】

When use for debugging elevator, calling elevator via panel is the same with the internal call floor command registration.

F26.01	Shaft self-learning	0,1【0】

0: Does not work.

1: Start shaft self-learning

F26.02	Driver function	0—255【3】

Bit0: Open driver function

0: Without driver function.

1: With driver function.

Bit2—Bit1: Hall call disposal at driver mode

00: Buzzer no action, and internal call is not flashing.

01: Buzzer no action, internal call is flashing.

10: Buzzer action, and internal call is not flashing.

11: Buzzer action, internal call is flashing.

Note: When the internal and hall call are valid at the same floor, the car display defaults 00 (buzzer no action, internal call is not flashing).

Bit3: CD arrival without registration command and auto open door

0: Auto open door.

1: Do not auto open door.

Bit4—Bit6: Reserved

Bit7: Closed door mode selection

0: Long press the CD button to close the door.

1: Jog to close the door.

F26.03	Firefighting function	0,1【1】
F26.04	Re-leveling function	0,1【0】
F26.05	Advanced open function	0,1【0】

F26.03—F26.05 define the corresponding function selection.

0: Without corresponding function.

1: With corresponding function.

Note: If you want the re-leveling function and the advanced open function, you should have the advanced open block (MT70-AOB-A).

F26.06	Hall call Modbus communication	0,1【0】

0: Do not open the hall call Modbus communication.

1: Open this function. When MONT71 requires the hall call board of MONT70, the various floors of the key information will be transmitted to the main control board through Modbus communication

- This method can reduce the hall call wiring, referring to 《MONT70 Series Elevator Integrated Controller User Manual》.
- For this method, the L1-L24 terminals in response to hall call function (Group F13) are invalid.

F26.07	Isolated run	0,1【0】

0: Do not open this function.

1: Open this function.

F26.08	Locked-elevator BCD code hall call display	0—255【0】

Bit0: To set the SegA output

0: No SegA output.

1: SegA output.

Bit1: To set the SegB output

0: No SegB output.

1: SegB output.

Bit2: To set the SegC output

0: No SegC output.

1: SegC output.

Bit3: To set the SegD output

0: No SegD output.

1: SegD output.

Bit4—Bit7: Reserved.

F26.09, F26.10	Manufacturer debugging parameter, prohibit to change	

F26.11	Miss delete car command	0,1【1】

0: No open.

1: Open.

F26.12	Inspection parameter setting	0—255【5】

Bit0: Inspection auto close door

0: Inspection without close door.

1: Inspection auto close door. At inspection operation, press the up/down run button, the elevator will automatically close the door; otherwise, will not output close door signal.

Bit1: Inspection over-current detection

0: Inspection run without limiting 110% rated current.

1: Inspection run with limiting 110% rated current.

Bit2: Stop mode selection at inspection

0: Immediate stop.

1: Dec stop.

Bit3: Detect door lock jump-out fault at inspection mode

0: Detect door lock jump-out fault.

1: Do not detect door lock jump-out fault.

Bit4: Detect up/down forced simultaneous operation at inspection mode

0: Detect.

1: Do not detect.

Bit5: Detect open/close door simultaneous operation at inspection mode

0: Detect.

1: Do not detect.

Bit6: Door machine non-service floor allow open/close door at inspection

0: Do not allow open/close door.

1: Allow open/close door.

Bit7: Detect the door machine CD arrival at inspection running

0: Do not detect close door arrival.

1: Detect close door arrival.

F26.13	Forced close door	0,1【0】

0: No open.

1: Open.

F26.14	Door lock jump-out test	0—65535【1】

Bit0: Door-lock jump-out test function

0: No open.

1: Open.

Bit1: Door-lock jump-out test mode

0: Test total door lock circuits together.

- All lock circuits in the door lock closed state, if a door machine OD arrival signal is received, it will alarm E0053 fault (Lock-door short-circuit fault).

1: Test each door lock circuit independently.

- Any one of lock circuits in the door lock closed state, if a door machine OD arrival signal is received, it will alarm E0053 fault (Lock-door short-circuit fault).

Bit2—Bit15: Reserved.

F26.15	Battery-driven run parameter setting	0—255【1】

Bit0: Battery-driven self-rescue timeout protection

0: Protection.

1: No protection.

At battery-driven self-rescue, if the car is in balance load or the rescue driving power's capacity is not adequate, it will cause long emergency rescue time and even dangers occur.

After the Bit0 is set as zero, it will enable to stop rescuing when auto-running car rescue time is over 100s, and rescue driving time is over 50s.

Bit1: Permanent magnet synchronous motor battery-driven auto-running

0: No open.

1: Open.

Bit2: Battery-driven direction judgment

0: Auto judge. The controller will automatically open the brake and detect the elevator light-load to auto judge the elevator running direction.

1: Judge in accordance with weighing signal.

Bit3: Fixed up run of battery-driven direction

0: This bit should not decide the direction.

1: The direction is fixed up run.

Bit4: Fixed down run of battery-driven direction

0: This bit should not decide the direction.

1: The direction is fixed down run.

Bit5—Bit7: Reserved

F26.16	Elevator enhanced function selection	0—65535【1】

Bit0: No run command at stop and auto open door

0: Do not auto open door.

1: Auto open door.

Bit1: Reserved

Bit2: Battery driven reset auto return to base station

0: Auto return to base station.

1: Do not return to base station.

Bit3: Cleared conditions of firefighting back to base station mode

0: Power off or firefighting switch is invalid

1: Fireman input valid and then clear.

Bit4: Non-service floor is allowed to open door at fireman operating elevator

Bit5: Non-service floor is allowed to open the door at fireman operating door machine

0: Not allow to open door.

1: Allow to open door.

Bit6: OD selection at firefighting back to base station power-on

0: Open door.

1: No open door.

Bit7: E0041 clear the internal call

0: E0041 fault clear the internal call.

1: E0041fault do not clear the internal call

Bit8: Forced Dec switch types

0: Ordinary forced deceleration switch.

1: Trigger forced deceleration switch.

Bit9: Open the function of pulling door manually

0: Do not open this function.

1: Open this function.

Bit10: Selections of up/down limit switch

0: Use the actual up/down limit switch.

1: Use the synthesis of leveling floor and end station switch.

Bit11: Back to leveling automatically

0: Back to leveling automatically due to meeting the running condition.

1: Back to leveling for the setting run command.

Bit12: Car energy-saving selections at OD waiting for elevator

0: Car is not energy-saving.

1: Car is energy-saving.

Bit13: Display the running direction sparkly

0: Do not display.

1: Display.

Bit14: Logic of fan and lighting

0: The logic is normal.

1: The logic is negated.

Bit15: Light curtain action modes of door 1 and door 2

0: Light curtains of Door 1and door 2 act alone.

1: Light curtains have inside association.

F26.17	Contactor contact adhesion failure auto reset	0,1【0】

Detect the run and the brake contactors' feedback contacts, alarm E0056 fault (run contactor feedback abnormal) and E0057 fault (brake contactor feedback abnormal) if the contacts are deviant, and they can't reset automatically.

If E0056 and E0057 faults occur, this function enables to reset automatically no more than three times as long as these faults disappear.

0: No open.

1: Open.

F26.18	Forced Dec switch adhesion detection	0,1【1】

This function enables to monitor the forced Dec switch all the time when the elevator is running. If adhesion is detected, it's forced to decelerate.

0: No open.

1: Open.

F26.19	Synchronous motor star-delta contactor parameter setting	0—255【0】

The synchronous motor star-delta contactor can assure that there won't be fast speed slide running even when the brake doesn't work.

- F26.19 is only valid for the permanent magnet synchronous motor.

Bit0: Synchronous star-delta contactor control selection

0: No control the output.

1: Control the output.

Bit1: Synchronous star-delta contactor normally open or close setting

0: Normally close. Generally the synchronous star-delta contactor uses the normally close.

1: Normally open.

Bit2—Bit7: Reserved

Based on the actual wiring diagram, set synchronous star-delta contactor as normally open/ normally closed type, control signal and feedback contact detection signal.

Details refer to the MCB terminal function parameters of Group F12.

F26.20	Manufacturer debugging parameter, prohibit to change	

F26.21	Open-through door control	0,1【0】

0: No open.

1: Open.

F26.22	OD function selection at this floor internal call	0,1【0】

0: No open door.

1: Open door.

F26.23	OD function of OD delay button	0,1【0】

0: Pressing the OD delay button does not work during CD process.

1: Pressing the OD delay button does work during CD process.

F26.24	Position deviation too large and return station to run	0,1【1】
F26.25	Position deviation too large and base setting	180—700【400mm】

F26.24 defines whether return to base station when the elevator position deviation is too large.

0: Do not return to base station.

1: Return to base station.

F26.25 is the base value for detecting deviation too large.

F26.26	Elevator increased function 2	0—65535【0】

Bit0: Close the door via CD button due to no OD arrival

0: The CD button cannot close the door.

1: The CD button can close the door.

Bit1: Detect the timeout of auto back to re-leveling

0: Detect.

1: Do not detect.

Bit2: Safety circuit fault priority

0: Normal safety circuit fault level.

1: High safety circuit fault level. If there are other failures in the system, this time after the safety circuit is disconnected, the system automatically resets the original fault, and then the fault code is updated to the present safety circuit disconnection fault.

Bit3—Bit15: Reserved

F26.27, F26.28	Manufacturer debugging parameter, prohibit to change	
F26.29	Emergency return leveling and stop delay	0.000—3.000【0.100s】

Define at emergency back to leveling operation, after receive the up/down leveling signal and the setting time of F26.29, decelerate to stop.

- Used to adjust the leveling accuracy at back to leveling floor.

F26.30	Return leveling and stop delay	0.000—3.000【0.100s】

Define at auto back to leveling run and open door re-leveling run, after receive the up/down leveling signal and the setting time of F26.30, decelerate to stop.

- Used to adjust the leveling accuracy at back to leveling floor, and will be automatically update after the shaft self-learning.
- Users generally do not need to change it. When the back leveling floor has poor accuracy or returns to leveling floor more than three times at one door zone, you can adjust the F26.30 for the leveling adjustment.

F26.31	Hall call parameter setting	0—65535【512】

F26.31defines the way of hall call display, used with F26.32.

- Only when F26.06 set as 1 and equipped with MT70-HCB-* hall call board, can F26.31 will work.
- When F26.06 set as 1 (open the hall call Modbus communication), F26.32/ F26.33/ F26.34 will work.

Bit0: The way of digital arrow display

0: Scrolled.

1: Fixed.

Bit1: Format of arrow display

0: Big arrow.

1: Small arrow.

Bit2: Direction button input type

Bit3: Firefighting signal input type

Bit4: Locked-elevator signal input type

0: Normally open.

1: Normally close.

Bit5: Floor display

0: Dynamic.

1: Direct.

Bit6: Single digit display

0: Center display.

1: Unilateral display.

Bit7: Energy-saving display selection

0: Enabled energy-saving display.

1: Disabled energy-saving display.

Bit9—Bit8: LCD bright adjustment

00: Low bright.

01: Middle bright.

10: High bright.

11: The brightest.

Bit10: HCB display fault code

0: No display.

1: Display.

Bit11—Bit15: Reserved

F26.32	Hall call parameter setting confirm	0,1【0】

0: No action.

1: Hall call parameter setting confirms.

Note: After modify F26.31 parameter, it will need to set F26.32 as 1, and send the hall call set to the HCB and the internal call display board of various floors by communication. If it only need modify Bit10 of F26.31, there is no need to set F26.32.

F26.33	Hall call HCB-H indicator 1 meaning	0—5【1】
F26.34	Hall call HCB-H indicator 2 meaning	0—5【2】

F26.33—F23.34 define the meanings of indicator1 and indicator 2 on MT70-HCB-H.

- The positions of indicator 1 and indicator 2 refer to section 4.3 (page 32).
- The user can flexibly choose, according to the actual configuration of the elevator.

0: No function.

1: Full load indication.

2: Inspection indication.

3: Stop indication.

4: Over load indication.

5: Fault indication.

F26.35, F26.36	Manufacturer debugging parameter, prohibit to change	

8.2.28 Group F27 Elevator Adjustment Enhanced Function Parameters

F27.00	Manufacturer debugging parameter, prohibit to change	
F27.01	Manufacturer debugging parameter, prohibit to change	
……		
……		
F27.58	Manufacturer debugging parameter, prohibit to change	
F27.59	Manufacturer debugging parameter, prohibit to change	

8.3 Group Y Manufacturer Function Parameters

The Group Y is the manufacturer parameters group for debugging MONT71 at the factory before delivery, which need no concerned about at using.

Chapter 9

System Typical Application and Adjustment

This chapter describes about the MONT71 series elevator integrated controller constituted the elevator control system in details, the basic steps of the system design and functional parameters setting method.

9.1 Adjustment Process

As the periphery circuit and machine installed are finished fully, you can adjust the MONT71 series elevator integrated controller in accordance with the process of Figure 9-1.

It is recommended sequentially to debug.

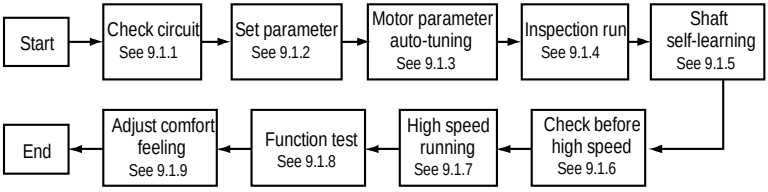


Figure 9-1 MONT71 debugging process

9.1.1 Wiring Check

After the control system wiring is finished, it need check the wiring:

1. Check the electrical and mechanical wiring to ensure the safety.

2. Check each connection whether is right in accordance with the manual and the wiring description. At least two staffs are required in debugging. And cut off the power immediately if abnormal situation occurs.

3. Check if the parts' types are matched. The safety circuit is passed through and the signal is normal. The door lock circuit is passed through and work reliably.

4. Shaft is smooth and no one is in the car, and it possesses the conditions suitable for the elevator safety running.

5. Really check the input power and the motor wirings whether are correct to avoid misusing power transmission and cause MONT71 damage.

6. Check the control cabinet, motor, car ground wire and hall ground wire whether is safely grounded to ensure the personal safety.

Note: The control cabinet and the motor should be confidential single point grounded.

7. Check the short-circuiting. If there is short-circuiting, please do not power on until exclude the short-circuiting.

- The input power supply interphase to the ground;
- The motor interphase to the ground;
- 220V interphase to the ground;
- The switch power supply 24V to the ground;
- The communication wire to the ground;
- The encoder wire to the ground.

8. Make sure the following items are reliably grounded.

- The control cabinet is grounded;
- The motor is grounded;
- The car is grounded;
- The door machine is grounded;
- The pipeline is grounded;
- The shielded encoder and motor end are grounded.

Note: The encoder's shielded cable requires one terminal of MONT71 to connect to the ground reliably.

9. Check the wirings of communication wire, encoder wire and power supply wire.

- The well's communication wire is twisted pair and twisted distance is <35mm;
- The encoder wire and the power supply wire should be separated from the alignment;
- The signal wire and the power supply wire should be separated from the alignment;

9.1.2 Parameter Setting

System power and check

Remove the brake control wire before power on.

1. Check the MCB +24V power supply input, and SK6 terminal of +24V and COM should be 24V.

2. Observe the corresponding LED lights of MCB X25－X27 to confirm that the high voltage safety circuit and the high voltage door lock circuit are in normal status. If the site still has low voltage safety circuit signal and low voltage lock signal, please check the corresponding input terminals of the MCB LED lights.

3. Observe the MCB Y1－Y23 LED lights to confirm the control brake relay without outputting, and connect to the brake control wire until power is cut down.

Set MONT71 parameters (must follow these steps)

Restore the factory parameter

F01.02 is set as 1 (restore to factory settings), press **ENT** key, and then the controller parameters restore to factory setting value.

Set the following parameters sequentially

1. Set F11.00 (encoder interface card type) and F11.01 (Encoder P/R).

2. Set F00.00 (motor type).

3. Set the motor parameters (Group F07 or Group F10) in accordance with motor nameplate.

4. Set F00.03 (elevator rated speed), the system will automatically calculate F00.06 (traction machine mechanical parameters) which should be compared to the value obtained by the following formula F00.06 so as to ensure that both are consistent.

$$F00.06 = \frac{\pi \times D}{i \times \text{Winding mode}}$$

Of which D: Diameter of motor (mm); i: Dec. rate; Winding mode: To set in accordance with the actual elevator setting.

5. Set the other parameters refer to the following table. And check the corresponding state of MCB and CTB I/O terminal setting function by Group D.

Parameter	Name	Recommended value	Remark
F00.00	Motor type	Based on the actual setting	
F00.01	Control mode	2 (VC control)	
F00.02	Elevator max running speed	Based on the actual setting	
F00.03	Elevator rated speed	Based on the actual setting	
F00.04	Elevator rated load	Based on the actual setting	
F00.05	Controller max output frequency	Based on the motor setting	Generally set as the motor rated frequency
F00.06	Traction machine mechanical parameters	The system automatically calculate	
F00.07	Operation mode	1 (distance control)	
Group F03	Acceleration and Deceleration Curve Parameters	Be set as needed	
Group F04	Speed Parameters	Be set as needed	
F07.00	Asynchronous motor rated power	Based on the actual setting	The motor type is asynchronous motor; you need to set the asynchronous motor nameplate parameters of Group F07.
F07.01	Asynchronous motor rated voltage	Based on the actual setting	
F07.02	Asynchronous motor rated current	Based on the actual setting	
F07.03	Asynchronous motor rated frequency	Based on the actual setting	
F07.04	Asynchronous motor rated RPM	Based on the actual setting	
F07.05	Asynchronous motor power	Based on the actual setting	

Parameter	Name	Recommended value	Remark
	factor		
F10.00	Synchronous motor type	Based on the actual setting	The motor type is synchronous motor; you need to set the synchronous motor nameplate parameters of Group F10. **Note:** **If F10.00 and F10.06 – F10.09 have no accurate parameters, please set as zero, or may not run correctly!**
F10.01	Synchronous motor rated power	Based on the actual setting	
F10.02	Synchronous motor rated voltage	Based on the actual setting	
F10.03	Synchronous motor rated current	Based on the actual setting	
F10.04	Synchronous motor rated frequency	Based on the actual setting	
F10.05	Synchronous motor rated RPM	Based on the actual setting	
F10.06	Synchronous motor stator resistance	Based on the actual setting	
F10.07	Synchronous motor cross axis inductance	Based on the actual setting	
F10.08	Synchronous motor direct axis inductance	Based on the actual setting	
F10.09	Synchronous motor Back EMF	Based on the actual setting	
F11.00	Encoder interface card selection	Based on the actual setting	Set according to the encoder
F11.01	Encoder P/R	Based on the actual setting	
F11.02	Encoder direction setting	Based on the actual setting	
Group F12	MCB input terminal setting	Set according to the drawings	Select the input high or low active by jumper; Select normally open or close input by parameter setting. Ensure the input state through observing the corresponding LED lights of MCB input terminals. **X25—X27 are high voltage safety and door lock input, for the safety, please ensure the safety circuit and the door lock circuit are correct.**
	MCB relay output terminal setting	Set according to the drawings	Ensure the relay output state by observing the corresponding LED lights of relay output terminals.
Group F13	MCB L-terminal function parameter setting	Set according to the drawings	Ensure the input and output state by observing the corresponding LED lights of MCB L- terminals.

9.1.3 Motor Parameter Auto-tuning

Note:

1. The crane car is needed for the rotation auto-tuning but not needed for static auto-tuning.
2. The motor and the encoder parameters must be set correctly before parameter auto-tuning.

Asynchronous motor——Parameter auto-tuning

1. You should set F00.07 as 0 (panel control).
2. Setting F07.06 as 1 (static auto-tuning) or 2 (rotation auto-tuning), then press RUN key of panel to do parameter auto-tuning. The motor does not rotate at static auto-tuning but rotate at rotation auto-tuning.
3. After finish auto-tuning, set F00.07 as 1 (distance control).

Note:

1. When auto-tuning, it can automatically open the run contactor; if at rotation auto-tuning, it need manually open the brake contactor for the safety.
2. At static auto-tuning, the motor will give howling duration of about 30s.
3. At rotation auto-tuning, if the motor occurs to oscillation and even overcurrent, please press STOP key to stop auto-tuning.

Take measure: Properly adjusting the F07.21 (oscillation-suppression mode) and F07.22 (oscillation-suppression coefficient) can remove the motor oscillation.

4. The asynchronous motor parameter auto-tuning does not require the encoder pole angle learning. After finish auto-tuning at inspection operation, if alarm E0030 fault (encoder reverse direction), the encoder AB directions may be connected reversely.

Take measure: Please change the encoder direction (F11.02).

Synchronous motor——Rotation auto-tuning

Configure the A/B/Z/U/V/W encoder

1. You should set F00.07 as 0 (panel control).
2. Set F10.10 as 2 (rotation angle auto-tuning), and press panel RUN key to do parameter auto-tuning.
3. **Auto-tuning process:** The controller with DC will locate the motor in one direction and begin to drive motor at a slow speed, and then stop running after some time, which represents that the auto-tuning is completed and obtain F10.12 (motor initial angle) and F11.02 (encoder direction setting).

Configure the SINCOS encoder

1. You should set F00.07 as 0 (panel control).

2. Set F10.10 as 2 (rotation angle auto-tuning), and press panel **RUN** key to do parameter auto-tuning.

3. **Auto-tuning process:** The controller with DC will locate the motor in one direction and begin to drive motor at a slow speed, and then stop running after one circle, which represents that the auto-tuning is completed and obtain F10.14—F10.17 (encoder parameters), F10.12 (motor initial angle) and F11.02 (encoder direction setting).

Note:

1. During step 2 and step 3, it need manually open the brake contactor.
2. If the system has synchronous motor star-delta contactor, please refer to the function parameter setting of section 9.2.1 of power failure emergency running program, at auto-tuning the system will automatically control the star-delta contactor, otherwise it will alarm over-current fault due to the output short-circuit.
3. At rotation auto-tuning, it will automatically detect the encoder direction.
4. Encoder wiring need strictly connect in accordance with the wiring diagram of the encoder, otherwise even if the A/B/Z connections are correct, the motor will run abnormally due to the U/V/W or C/D phases connection fault.
5. For the SINCOS encoder, each time the deviation of F10.12 results should be less than 5°, or the difference of the F10.12 result and the 360°/ motor pole pairs of integer multiple should be less than 5°, whose results are considered as the normal, otherwise need to restart auto-tuning.

If: The motor pole pairs are 12, and three times the auto-tuning results are 241.1°, 59.8° and 120.2°, the difference of three times will be less than 5°.

For: Calculate 360°/ 12= 30°, three times result is 241.1°- 59.8°= 181.3° and 30° integer multiple is 180°, and their difference is 1.3° which is less than 5°; equally 120.2°-59.8°= 60.4° and 30° integer multiple is 60°, the difference is 0.4° which is less than 5°.

6. For the A/B/Z/U/V/W encoders, F10.12 is electrical angle, and each time the deviation of F10.12 results should be less than 30°, which can be considered as the normal, otherwise need to restart auto-tuning.
7. If the abnormal occur during auto-tuning process, press **STOP** key to stop auto-tuning.
8. After finish the parameter auto-tuning, it need set F00.07 (operation mode) as 1 (distance control).
9. At auto-tuning, the motor just return from standstill to start the process, if alarm E0030 fault (encoder reverse direction) or E0031 fault (encoder disconnection), you can try to reduce the KP and KI of ASR (Group F08).

Synchronous motor——Static auto-tuning

Before do the static auto-tuning, please refer to the preparation work of section 9.1.4 Inspection Operation, and then do the synchronous motor static auto-tuning.

Configure the A/B/Z/U/V/W encoder

1. You should set F10.12 (synchronous motor initial angle) as 0.

2. F00.07 is set as 1 (distance control).

3. F10.10 is set as 1 (static angle auto-tuning).

4. Give the signals to terminal inspection and direction, at auto-tuning, the controller issues a series of pulse voltage, and the motor issues humming. The motor will run at inspection after the humming is over, and stop running after one circle. Obtaining F10.12 (synchronous motor initial angle) presents that the static auto-tuning is over.

5. After the panel display interface exits parameter auto-tuning interface, the inspection direction command can be removed.

Configure the SINCOS encoder

1. You should set F10.12 (synchronous motor initial angle) as 0.

2. F00.07 is set as 1 (distance control).

3. F10.10 is set as 1 (static angle auto-tuning).

4. Give the signals to terminal inspection and direction, at auto-tuning, the controller issues a series of pulse voltage, and the motor issues humming. The motor will run at slow speed after the humming is over, and automatically stop running after one circle. Obtaining F10.14—F10.17 (encoder parameters) and F10.12 (synchronous motor initial angle) presents that the static auto-tuning is over.

5. After the panel display interface exits parameter auto-tuning interface, the inspection direction command can be removed.

Pay attention to the following:

1. If the system has synchronous motor star-delta contactor, please refer to the function parameter setting of section 9.2.1 of power failure emergency running program, at auto-tuning the system will automatically control the star-delta contactor, otherwise it will alarm over-current fault due to the output short-circuit.
2. The preset direction is inconsistent with the actual running direction.

Take measures: Set the reverse value of F00.10 (elevator run direction), and re-start to do auto-tuning.

3. During the auto-tuning process, if over-current or encoder reverse fault is occurred, it may be the encoder reverse direction.

Take measures: Set F11.02 as 1 (the reverse direction), and re-start to do auto-tuning.

4. Since the static auto-tuning of SINCOS encoder is over, run at inspection again to check whether operating normally. If occur fault or out of control, check whether the C/D phases of SINCOS encoder are connected reversely.
5. For the SINCOS encoder, each time the deviation of F10.12 results should be less than 5°, or the difference of the F10.12 result and the 360°/ motor pole pairs of integer multiple should be less than 5°, whose results only are considered as the normal, otherwise need to restart auto-tuning.
6. For the A/B/Z/U/V/W encoders, F10.12 is electrical angle, and each time the deviation of F10.12 results should be less than 30°, which can only be considered as the normal, otherwise need to restart auto-tuning.
7. If auto-tuning is unsuccessful, there will be out of control danger. It is recommended that two people with: one press the inspection button, the other press the emergency stop button, when occur out of control, you can promptly cut off power.
8. If F10.12 (synchronous motor initial angle) is zero, the elevator can not go staircase.
9. Static auto-tuning is needed to meet that the door lock circuit is closed, and the safety circuit is closed.
10. If the abnormal occur during auto-tuning process, press the emergency stop button to stop auto-tuning.
11. At auto-tuning, the motor just return from standstill to start the process, if alarm E0030 fault (encoder reverse direction) or E0031 fault (encoder disconnection), when changing the encoder direction (F11.02) is invalid, you can try to reduce the KP and KI of ASR (Group F08).

9.1.4 Inspection Operation

Preparation work before inspection operation

Before inspection operation, **please confirm the following points:**

1. The inspection switch of control cabinet is in the “inspection” position, and the inspection switch of car top is in the “normal” position.

2. The safety circuit and the door lock circuit of machine room and shaft are normal and effective.

Note: No short-circuit the safety circuit or the door lock circuit.

3. The encoder is installed correctly and wiring is normal.

4. After power on the MONT71 display is normal, and checks the MONT71 parameter settings are correct, the panel’s “status display interface” displays the elevator running state as “inspection”, the MCB’s INS is lighting.

5. Motor brake cable is properly connected to the terminals of the control cabinet.

6. The wirings of upper and lower terminal deceleration switch and car top inspection priority circuit are normal.

Machine room inspection operation

1. To make sure that the direction of motor is correct. If it is not correct, please check the up/down input terminal connection and parameter setting, if the connection is correct, please set the F00.10 as 1 (elevator running direction).

2. At elevator slow speed up or down running, if MONT71 displays motor’s feedback speed instability or excessive preset deviation value, you need to check the wiring between the encoder and encoder interface card:

- All connections are correct. If the encoder is a differential signal, the shielded twisted pair cable should be used; otherwise, you can use the general shielded cable.
- Wiring is reasonable. The encoder cable and the power line must be strictly separated, which cannot go with a trunking.
- Check the shielded wire and the shielded network are reliably grounded.

3. Check up and down two leveling switches and door zone signal wiring. If the order is wrong, check the external wiring. **The correct is:**

- At the elevator slow speed up running, the successively effective signal is: up leveling signal, door zone signal and down leveling signal.
- At the elevator slow speed down running, the successively effective signal is: down leveling signal, door zone signal and up leveling signal.

The leveling signal installations are refered to section 4.4 Advanced Open Block (MT70-AOB-A) (page 33) for the detail.

Note:

1. On many occasions, the slow speed running of the machine room is not inspection run, but the emergency electrical operation. At this time, in the safety circuit, the safety gear switch, the governor switch, the up overspeed protection switch, the up and down terminal limit switch and the buffer reset switch are jump out in the slow speed run, so you must pay particular attention to it.

Suggestion: The emergency electrical running time and distance of the machine room are not too long, but do not run the car to the end terminal position.

2. When the shaft self-learning is over, and change F00.10 (elevator running direction), the shaft self-learning is needed to be restarted.

Car top inspection operation

It can not run car top inspection until fully verify the machine room inspection run properly.

First run, slower inspection speed can be set, and other corresponding parameters are set as following table.

Parameter	Name	Recommended value	Remark
F03.06	Inspection Acc speed	Based on the actual setting	
F04.00	Inspection run speed	Based on the actual setting	
F26.12	Inspection parameter setting	Based on the actual setting	

1. First turn the car top automatic and inspection switch to inspection position, therefore to confirm that up and down buttons in machine room control cabinet are invalid.

2. Jog press the up and down buttons of car top to confirm the button direction and the car running direction are consistent.

3. Operating the elevator up and down on car top for commissioning a back and forth, carefully observe the car around during commissioning process and confirm that no obstacle hinders the car running throughout the shaft.

4. Through the car top inspection operation, confirm the shaft end terminal deceleration switch action and the action in correct position.

5. Through the car top inspection operation, confirm that shaft leveling switch and leveling plate installation are correct; at every leveling position, each leveling switch action point is correct.

Note:

1. At car top inspection operation, you should always pay attention to the car whether encounter other obstacles. If so, stop in time.
2. At inpsection runtime, if the shaft switch is not installed in place, the system may alarm fault, which can be shielded by function parameter F26.12 (inspection parameter setting).

9.1.5 Shaft Self-learning

Before high speed running, the elevator must do shaft self-learning.

1. The elevator is in inspection state.

2. Makes the elevator arrive to the lower limit position, and ensure that the down forced deceleration signal is valid and the present floor is floor 1.

Note:

1. For a total of two floors self-learning, you need to ensure that the down leveling switch is under the leveling plate.
2. For the total floors are greater than two, there is at least one leveling switch in the leveling plate.

3. Setting F26.01 as 1 (start shaft self-learning) by the panel, then the elevator starts the shaft self-learning (or by using small panel enter Group F7 to set zero as 1 (start shaft self-learning)).

4. At shaft self-learning, the elevator runs at shaft self-learning speed (F04.03), and records the leveling plate length, each floor height and up/down forced deceleration switch position.

5. When the elevator runs to the upper limit bit, it will automatically stop. If there is no fault alarm, indicate the completion of the self-learning process.

Note:

1. Check parameters F19.12 and F19.13 to confirm that you learn the correct forced deceleration position; Check Group F20 function parameters to confirm whether learning the correct floor data.
2. Check that parameters of D03.02 (distance of lowest floor) and D03.03 (distance of highest floor) are consistent with the actual.
3. Check that parameters of D05.06 (leveling switch number), D05.07 (length between leveling switches) and D05.08 (leveling plate length) are consistent with the actual.
4. After adjust the leveling plate or the forced deceleration switch position, you must restart the shaft self-learning.
5. The shaft self-learning can be interrupted in the following cases: 1) the inspection switch switches to normal position, this time alarms self-learning fault; 2) operation fails.
6. If the shaft self-learning is unsuccessful, you may refer to the reason Chapter 10 Troubleshooting (page 213).

9.1.6 Check before High Speed

Check the internal/hall call elevator signal via the state parameters of Group D, as following table.

Parameter	Name	Parameter	Name
D03.00	Present floor	D03.05	Registration state of back door 10－1 internal call floor
D03.01	Present height	D03.06	Registration state of front door 9－1 hall call up run
D03.02	Distance of lowest floor	D03.07	Registration state of back door 9－1 hall call up run
D03.03	Distance of highest floor	D03.08	Registration state of front door 10－2 hall call down run
D03.04	Registration state of front door 10－1 internal call floor	D03.09	Registration state of back door 10－2 hall call down run

Open/close door debug

1. Turn the inspection switch to the inspection position. Set parameter for the door machine inverter to ensure that its running curve is normal and output OD/CD arrival signal normally.

2. According to system configuration, connect the OD/CD arrival signal of the door machine inverter to the control system.

3. The elevator inspection opens to the leveling area.

4. The OD/CD command is given by the following three methods:

- Via the up/down command, the elevator automatically closes the door; at the same time give the up/down command, elevator automatically opens the door.
- Via the panel, long press **RUN** key to open the door, and long press **STOP** key to close the door.
- Via the car's OD/CD button to operate.

5. Check the door machine running direction whether correct, the OD/CD arrival signal whether normal, and the light curtain and touch board signal whether effective action.

Note:

Using the panel checks the D04.00 and D04.01 so as to monitor door machine OD/CD arrival signal, light curtain signal and safe touch board signal etc.

In inspection mode, light curtain and safe touch board action do not open the door but can monitor the signal whether normal.

9.1.7 High Speed Running

High speed running precondition

1. Door lock circuits are connected.
2. No 2 or 3-level fault at elevator.
3. Door machine CD arrival signal is valid.
4. Floor storey data is correct.
5. F10.12 (synchronous motor initial angle) is not 0.
6. No over-load signal input.

High speed commissioning

After fully validate the inspection running normally and shaft self-learning success, the high speed commissioning can be operated.

After the shaft self-learning is completed, the system will automatically calculate the speed curve adapted to the elevator operation in accordance with the elevator floor distance, and automatically store to F19.07－F19.11 (highest speed of curve). General users do not need to modify.

1. Turn the inspection switch to normal.

2. Using panel to set F26.00 (call elevator floor setting), and make single-floor, double-floor, multi-floor and full-floor automatic operation.

3. To confirm the elevator normally switch door, acceleration and deceleration, call elevator and parking.

Safe test running

Safety circuit test

At the elevator standby, and safety circuit is disconnected, the elevator can not run and alarm E0041 fault (safety circuit disconnection);

At the elevator running, and the safety circuit is disconnected, the elevator emergency stop and alarm E0041 fault (safety circuit disconnection).

After the safety circuit is closed, the fault is automatically reset.

Door lock circuit test

At the elevator standby, and the door lock circuit is disconnected, the elevator can not run;

At the elevator running, and the door lock circuit is disconnected, the elevator emergency stop and alarm E0042 fault (door locked disconnection during running).

After the door lock circuit is closed, the fault is automatically reset.

Contactor adhesion protection

The artificially created adhesions situation of system configuration such as: the run contactor, the brake contactor, the synchronous star-delta contactor, the locked-door contactor etc. can confirm that the system be protected.

Run timeout protection test

At the inspection mode, operate the elevator to floors of non-leveling area, and removal of leveling signal line.

Turn the inspection switch to normal position, and the elevator returns to leveling floor at inspection speed. When the running time exceeds the preset time of F23.02 (largest floors run interval), the system will emergency stop and alarm E0040 fault (elevator run timeout).

Note:

If within the F23.02 (largest floors run interval), the elevator detects E0058 fault (leveling signal abnormal) first, the system will not alarm E0040 fault (elevator run timeout), which is normal phenomenon.

The leveling signal has beening detected due to a leveling abnormal signal detection module.

Take measure: Set F23.02 as 10s. After fault is reset, re-start to do the run timeout protection test. When alarm E0040 fault (elevator run timeout), it will restore F23.02 to factory value (45s).

Over-load function test

Test requirements: the elevator overload switch action, check the elevator should not close, buzzer inside the car, internal call board with overload display.

Note:

It need set the corresponding output functions of Group Y as the buzzer output (No. 21 function) and over-loaded output (No. 22 function).

Split-level protection test

The elevator is running to the middle floor, modify F19.01 (present floor) for other values and confirm that the elevator running to the top or bottom floor can normally decelerate without leveling hoisting or squatting. If F19.01 is reduced, the calling elevator floor is the highest floor; contrary to floor one.

Note:

1. Do not set F19.01 as 1 or the heighest floor; otherwise it will alarm E0039 fault (down forced Dec switch disconnection) or E0038 fault (up forced Dec switch disconnection).
2. When the forced deceleration acts, elevator will creep to the end station leveling area at speed of 0.100m/s. After the leveling signal is valid, by adjusting F03.14 (forced stop Dec jerk) to ensure the leveling accuracy (F03.14 will automatically update after the shaft self-learning).
3. If open the position deviation too large detection function (F26.24 = 1), when the elevator detect that position deviation is greater than the preset reference value (F26.25), elevator will immediately decelerate and creep to the leveling area at speed of 0.100m/s. After open the door, the elevator will automatically return to the base station at speed of 0.200m/s.

9.1.8 Function Test

According to the actual needs, set Group F26 parameters (elevator function selections), and adjust Group F21 parameters: parking base station (F21.00), fire base station (F21.01), Locked-elevator base station (F21.02), and service floor (F21.03).

Auto running test

Register certain internal call signals in the car

Confirm that the elevator can normally close the door, start, run at high speed, and in the recent instruction registered floors can automatically slow down, stop, correctly eliminate number (elimination number of instructions and stopping floors should be the same), and open the door.

Register certain up/down hall call signals outside the hall

Confirm that the elevator can normally close the door, start, run at high speed, and can normally stop, slow down, correctly eliminate number and open the door.

Driver running test

Open the driver running function via F26.02 (driver function parameter), while the factory default has opened this function.

Turn the car switch to the driver state and register certain internal call signals

Confirm that the continuous press on CD button will make the elevator close the door (if you release the CD button before the door closes, the elevator will immediately act from CD action to OD action till the door is opened). After the door is closed, the elevator will automatically start, run at high speed, and automatically decelerate in recent registered instruction floors, stop, correctly eliminate number and automatically open the door.

Register certain up/down hall call signals outside the hall

Confirm that the continuous press on CD button will make the elevator close the door (if you release the CD button before the door closes, the elevator will immediately act from CD action to OD action till the door is opened). After the door is closed, the elevator will automatically start, run at high speed and normally automatic interception, decelerate, correctly eliminate number and automatically open the door.

Isolated running test

Open the isolated running function via F26.07 (isolated run), while the factory default does not have opened this function.

Turn the car switch to independent state, observe outside hall that should be no floor dispaly (or there is floor display with sign similar to "disable"), and call buttons should not work.

Register the instruction inside the car and continuous press on CD button will make the elevator close the door (if you release the CD button before the door closes, the elevator will immediately act from CD action to OD action till the door has opened). After the door is closed, the elevator will automatically start, run at high speed, and automatically decelerate in recent registered instruction floors, stop, correctly eliminate number and automatically open the door.

Firefighting back to base station function test

Open the firefighting function via F26.03 (firefighting function), and the factory default has opened.

According to the actual situation, set F21.01 (fire base station). The firefighting switch can be connected to the firefighting input terminals of HCB, and also can be connected to the input terminals of MCB X1－X24 (F12.01－F12.24 setting).

Turn on the firefighting switch off fire base station switching, observe whether the elevator can normally return to fire base station and keep opening the door after arrived.

Advanced options parameter settings can be seen Bit3 and Bit6 of F26.16 (elevator enhanced function selection).

Fireman running function test

Open the firefighting function via F26.03 (firefighting function), and the factory default has opened.

Fireman input terminals can be connected to MCB input terminal X1－X24 (F12.01－F12.24 setting).

After the elevator fire back to base station, and turn on fireman running switch (that is, to enter the fireman running state), the elevator will not automatically open or close the door.

To close the door in the OD arrival state, you can continuously press CD button till the door is closed, and then release the button, the elevator will remain closed. If release the CD button when the door is not yet closed, the elevator will be changed to OD action till there is OD arrival. At the fireman running mode, each time only one internal call floor instruction can be registered. If there is instruction signal registration, the elevator will immediately auto-start, run at high speed, and will decelerate, stop and eliminate number on the registration instruction floor. At stopping the elevator does not open the door, only when you continue to press the OD button can the elevator open the door. The elevator can not keep the door opening until there is OD arrival. If you release the OD button halfway, elevator will immediately go from door opening to door closing operation till the door is closed. In the fireman operating state, the hall call button signal does not work. Only when stopping at the fire base station, the elevator in OD arrival state, and firefighting and fireman switch is reset, can the elevator return to the normal operating state.

Advanced options parameter settings can be seen Bit4 and Bit5 of F26.16 (elevator enhanced function selection).

Auto return to leveling running

Due to a fault or other reasons the elevator stops to a non-leveling area, after meet the running conditions, the elevator will run at speed of 0.200m/s to the near leveling area; when arrive to the leveling area (wherein one switch is actuated, and another switch is unactuated), the elevator running speed is the re-leveling speed (F04.04); when two leveling floors are effective, after the elevator delays the time of F26.30 (return leveling and stop delay), it will decelerate to stop at inspection decelerated speed (F03.07).

The relevant parameters are set as follows in table.

Parmater	Name	Recommended value	Remark
F03.07	Inspection Dec speed	1.000m/s^2	
F04.04	Re-leveling speed	0.040m/s	
F26.30	Return leveling and stop delay	0.100s	Automatic update after shaft self-learning

9.1.9 Adjustment for Comfortable Feeling

Machinery related factor adjustment

1. If the guide mounting flatness and verticality is not good, elevator will appear jitter or vibration, and appear horizontal shaking in certain positions.

2. Too tight the guide shoe is, a sense of frustration will be maked at start and stop. Too loose the guide shoe is, shake will be appeared in running car. Let car guide shoe bear the least resistance, and achieve elevator best quality of running.

3. The tightness of the steel rope is also important factors which affect elevator comfort.

4. The motor brake will also affect the operation of the elevator.

Start torque compensation

Pre-torque auto-compensation (adapt to all type of encoders)

F05.00 is set as 3 (pre-torque auto-compensation).

Even if MONT71 does not install weighing device, in starting moment the torque can be automatically adjusted out to prevent the elevator out of control.

You can fine-tune F05.16—F05.18 to adjust the starting instant comfort.

Comfort adjustment of synchronous and asynchronous motors configured with weighing device at starting

- Analogue weighing compensation (F05.00 = 1)

1. Confirm that the weighing sensor signal is connected correctly.

2. According to the weighing sensor signal input to the MCB, correctly set F05.01 (weighing input selection) as 1 (analogue weighing).

3. Weighing compensation at no-load self-learning.

Operating steps: The elevator is in the base station and there is no load in the car. Set F05.03 as 1 (no-load self-learning), then press **ENT** key, the system will automatically record the voltage value of weighing sensor and save to F05.04 (car no-load).

4. Weighing compensation at load self-learning.

Operating steps: The elevator is in the base station and there is N% load in the car. Set F05.06 as N%, and set F05.03 as 2 (other load self-learning), then press **ENT** key, the system will automatically calculate the voltage value of weighing sensor at car full-load and save to F05.05 (car full load).

5. After complete the analog weighing compensation learning, you can do start torque compensation to prevent the elevator instantaneous start from slipping car.

Timing adjustment at start and stop

Adjust the start and stop control parameters (Group F02). Guarantee that at starting, the motor releases the brake after runs at zero speed; at stopping, closes the brake after completely runs at zero speed.

If open the brake or close the brake at non-zero speed, there will be a strong sense of frustration at the start and stop instantly. Factory default parameters are generally able to ensure the correct timing of starting and stopping. When it does not meet the demand, it needs to adjust Group F02 parameters.

Acc/Dec curve (S curve) adjustment

MONT71 use S-curve acceleration and deceleration to minimize the impact at acceleration and deceleration, and make relatively stable at starting and stopping.

However, different applications need to use different acceleration and deceleration curve parameters. If accelerate or decelerate too fast, the comfort will be affected; if accelerate and decelerate too slowly, the operating efficiency of the elevator will be reduced.

Please adjust according to the actual situation, when need slow acceleration and deceleration, please reduce parameters F03.00－F03.05; on the contrary, please increase the parameters F03.00－F03.05.

- Acceleration speed/deceleration speed (F03.00 / F03.03): Speed changed rate.
- Acc jerk/Dec jerk (F03.01、F03.02 / F03.04、F03.05): Acc/Dec changed rate.

PI parameter adjustment

The speed-loop parameters (Group F08) are used to adjust the speed-loop PID regulator. The PID regulator can affect the system's quick response, overshoot and the magnitude of the deviation, therefore setting appropriate PID parameters is very important for improving the comfort of the elevator.

Adjust the speed-loop PI parameters in accordance with the actual situation; refer to section 8.2.9 of Group F08 parameters (page 137) for details.

Leveling accuracy adjustment

1. First ensure accurate leveling plate installation, and the lengths of each leveling plate are consistent.

2. Speed-loop parameters (Group F08) may also affect the leveling adjustment accuracy so as to ensure that the system is running without overshoots occurring.

3. Encoder subject to interference may also affect the leveling adjustment accuracy, please ensure that the encoder has well signal.

Leveling accuracy adjustment methods at normal operation are as follows:

1. F19.06 is set as 0 (direct parking mode 0), the fine-tuning may be done via F19.03 (leveling distance adjustment).

At elevator stopping, if it is over leveling, reduce F19.03; if under leveling, increase F19.03.

2. F19.06 is set as 1 (direct parking mode 1), first ensure that the elevator has a short creep (creep distance is set by F19.03), then by F03.13 (stop Dec jerk) and F04.02 (creeping speed) to fine-tune the leveling accuracy.

At elevator stopping, if it is over leveling, increase F03.13; if under leveling, reduce F03.13.

The F03.13 parameter generally does not need users to change, and it will be automatically updated after the shaft self-learning to ensure leveling accuracy.

Fatigue test for new elevator

After install a new elevator, the new elevator mechanical motor run-in test should be done.

The fixed run way of the elevator setting number of random run or the designated floor can be carried out via Group F25 parameters.

9.2 Typical Application Instruction

9.2.1 Power Failure Emergency Running Program

During the elevator running process, if the system's power suddenly broke, passengers may be trapped in the car. For this situation, MONT71 designed a power failure emergency running program which is easy and convenient to fulfill.

MONT71 power failure emergency running program are separated into two modes according to the power source of the traction machine. They are **auto-running car and emergency power supply run**.

Descriptions of two power failure emergency running programs

Auto-running car: After the MONT71 receives a power-failure-rescue signal, you should jump out the U/V/W's wire of synchronous motor via star-delta contactor, use the prevent-force limits the car's running by synchronous motor jumps out stator coil, and then open the brake. That is a rescue-way's which the car is running slowly to get to the leveling position. During this process you should monitor the elevator's speed, when detect the leveling signal, it will keep opening the door, output buzzer and stop running.

Emergency power supply run: Both the main circuit and work-power of MONT71 have adopted the emergency power supply for power failure emergency run.

After MONT71 chooses the way of power failure rescue, it would run at emergency speed, the direction is the same to run direction of elevator light-load run. When detecting signal, it will open the door and stop running.

Difference of two power failure emergency running programs

It can be seen from two kinds of program descriptions:

- For the synchronous motor, elevator can choose auto-running car or emergency power supply to run.
- For the asynchronous motor, it can only choose emergency power supply to run.

In order to distinguish the two modes, their features are described in the following chart.

Mode	Source of motor's power	Work-power MONT71	Work-power of elevator's safety circuit	Range	Other
Auto-running car	Synchronous motor jumps stator coil	Using the emergency power which is greater than 220V (or inverter)	Using the emergency power which is greater than 220V (or inverter)	Synchronous motor	Need the star-delta contactor to jump out U/V/W's wire
Emergency power supply run	Emergency power supply run	Emergency power supply run	Emergency power supply run	Synchronous motor or asynchronous motor	

Emergency running connection

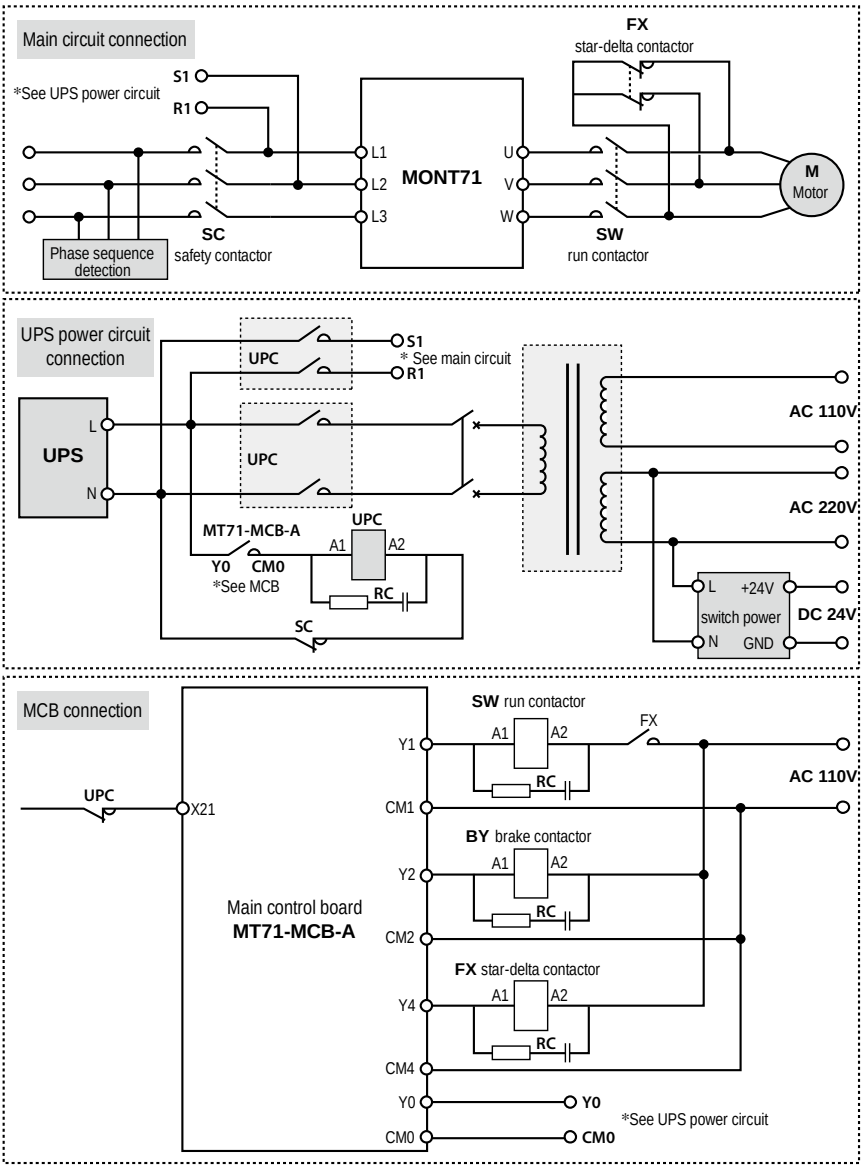


Figure 9-2 Emergency running connection

Auto-running car program

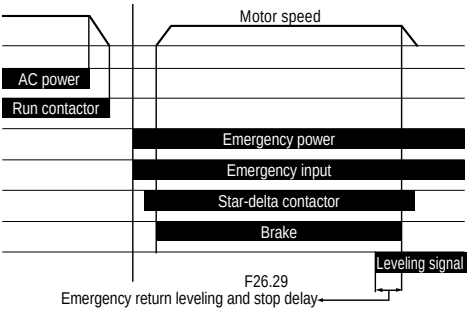


Figure 9-3 Auto-running car time sequence

Function parameter setting

According to Figure 9-2, setting function parameters of auto-running car are as follows.

Parameter	Name	Setting value	Meaning
F12.21	MCB input terminal X21	33	Battery driven normally open input (UPC)
F12.32	MCB relay Y4 output terminal	3	Synchronous star-delta contactor output (FX)
F12.28	MCB relay Y0 output terminal	32	Power failure emergency run is enabled (UPC)
F26.19	Synchronous motor star-delta contactor parameter setting	Set according to the actual	According to the synchronous star-delta contactor operation mode and control functions
F26.15	Battery-driven run parameter setting	Bit0 Set according to the actual	Whether open the emergency operation timeout protection
		Bit1 =1	Open the synchronous motor atuo-running car function

According to Figure 9-2, setting function parameters of emergency power supply run are as follows.

Parameter	Name	Setting value	Meaning
F12.21	MCB input terminal X21	33	Battery driven normally open input (UPC)
F12.28	MCB relay Y0 output terminal	32	Power failure emergency run is enabled (UPC)
F26.15	Battery-driven run parameter setting	Bit1=0	Do not open atuo-running car function
		Bit2=1	Automatically judge the direction of the emergency operation

Auto-running car description

It can be seen from Figure 9-2 emergency running connection, normality, the UPC should have disconnected, this time, when the UPS is charging, the system's power comes from main power supply.

When the main power is cut off, the controller's bus voltage is reduced to a certain value and the MCB Y0 relay outputs (the user may also manually switch), the UPC is closed this time, and the UPS power is supplied to system power.

When MONT71 receives the UPS valid signal of X21 input, and make sure that the mode is power failure emergency run, Y4 output makes the star-delta contactor close, then open the brake, the elevator will auto-running slowly; at the same time monitor elevator speed till leveling.

Note:

1. During the auto-running is run, the MONT71 can't control the motor drive, the power of life auto-running is come from self-supply power of synchronous motor.
2. During the auto-running is run, if the elevator's speed is more than 1/2 rated speed, the MONT71 will alarm E0032 fault (motor over speed), don't be controlled by auto-running, and at the same time the star-delta contactor of synchronous motor maybe get abnormality.
3. The auto-running car emergency program is only applied to synchronous motor, and never be applied to asynchronous motor, otherwise, it will be very dangerous;
   The auto-running car emergency program needs some gap between load in the car and load of elevator balance; otherwise, the elevator run-speed will be slow.
4. At auto-judging direction of the emergency power supply to run, it will automatically open the brake. When the car auto-running direction is detected, it will automatically run to the light load direction.
5. Power failure emergency running direction priority is: automaticlly judge the direction>UPS specified running direction>weighing signal confirmed direction>position judged direction.

9.2.2 Open-through Door Description

The open-through door control is mainly used in the same floor needing two doors or the car inside needing double internal call occasions.

The open-through door control mode is as following table:

Control mode	Set para.	Function description	Wiring description
Control the open-through door simultaneously	F26.21 = 0 (do not open the through door control) F22.13 = Any value	• Connecting the front and back door hall call button can achieve open-through door at the same time control, up to 8 floors.	
	F26.21 = 1 F22.13 = 0	• The open-through doors are consistent. • The responses of internal call /hall call /open and close door of door 1 and door 2 are completely consistent this time, and the open and close door operations too.	• At the same floor, call buttons or switch buttons of door 1 and door 2 can access the same floor input and output terminals so as to increase the maximum running floor.
Open-through door of control mode 1 (hall call separately, internal call consistent)	F26.21 = 1 F22.13=1	• After the call responses of door 1 and door 2 are the same, and reach the target layer, the system will decide which door to open, according to the input signal state selected by door 2. • If this signal is high level, the elevator will open door 2; if it is low level, the elevator will open door 1. • This signal can be connected to the switches or buttons in car, controlled by person in car.	• At the same floor, internal /hall call buttons or switch buttons of door 1 and door 2 can access the same floor input and output terminals so as to increase the maximum running floor. • At this method, the X-terminal needs door2 to select signal function, otherwise the elevator will only open door 1.
Open-through door control mode 2 (hall call separately, internal call control manually)	F26.21 = 1 F22.13=2	• After the hall call responses of door 1 and door 2 are separately, and reach the target layer, the system will decide which door to open, according to the input signal state selected by door 2. • If this signal is high level, the elevator will open door 2; if it is low level, the elevator will open door 1. • This signal can be connected to the switches or buttons in car, controlled by person in car.	• At the same floor, hall call buttons of door 1 and door 2 must access two different floors of input and output terminals separately. • At this method, the X-terminal needs door2 to select signal function, otherwise the elevator will only open door 1.

Control mode	Set para.	Function description	Wiring description
Open-through door control mode 3 (hall call separately, internal call separately)	F26.21 = 1 F22.13=3	• After the hall call responses of door 1 and door 2 are separately, and reach the target layer, the system will decide which door to open, according to the present internal call response, door 1 or door 2.	• At the same floor, hall and car call buttons of door 1 and door 2 must access different floor input and output terminals separately, otherwise the elevator will open door1 and door2 simultaneously.

Note:

At firefighting, inspection and back leveling floor modes, the open-through door does not separately control, but can simultaneously control.

Description of double hall calls at the same floor

If some floors of the elevator need to configure dual hall calls, MONT71 provide appropriate solutions.

1. Connect door 2 (back door) to the button input terminals of main board;

2. Set parameter F26.21 to 1 (open the open-through door control), and reasonable set F22.17 (open-through door control mode) according to the actual configuration of the open-through door.

Description of double internal calls inside the car

The double internal calls inside the car have two cases.

- If there is only one door, the significances of the two internal calls are the same. The button simple wire in parallel can be achieved.
- If there are two doors, the usage refers to section 9.2.2 Open-through Door Description.

9.2.3 Description of Over-load and Full-load

MONT71 supplies many over-load and full-load signals inputting modes.

When in use, correctly set the corresponding parameters. Briefly explain its use in the following:

Analogue input terminal inputting method

Via MCB or CTB input terminal select over-load and full-load signal input, changing normally open/ normally closed set can match different types of switches.

Analogue weighing signal inputting method

Anglogue signal input channels: MCB's AI terminal

The analog can do weighing self-learning, which is referred to section 8.2.6 Group F05 Weighing Compensation Parameters (page 132).

When analog weighing signal is more than 80% of the full-load signal, it can be considered a full-load signal; if more than 110%, it is the over-load signal.

Note:

As long as the input terminals of MCB select full-load and over-load signal, the full-load and over-load signal input function will be valid.

This switch value can be used with analog weighing together.

9.3 Typical Application Wire

This section describes the practical application of the wiring diagram in a typical application, specifically as follows:

- Wiring diagram of full selective factory setting value;
- Wiring diagram of full selective largest floor;
- Wiring diagram of down selective largest floor;
- Wiring diagram of open-through door full selective.

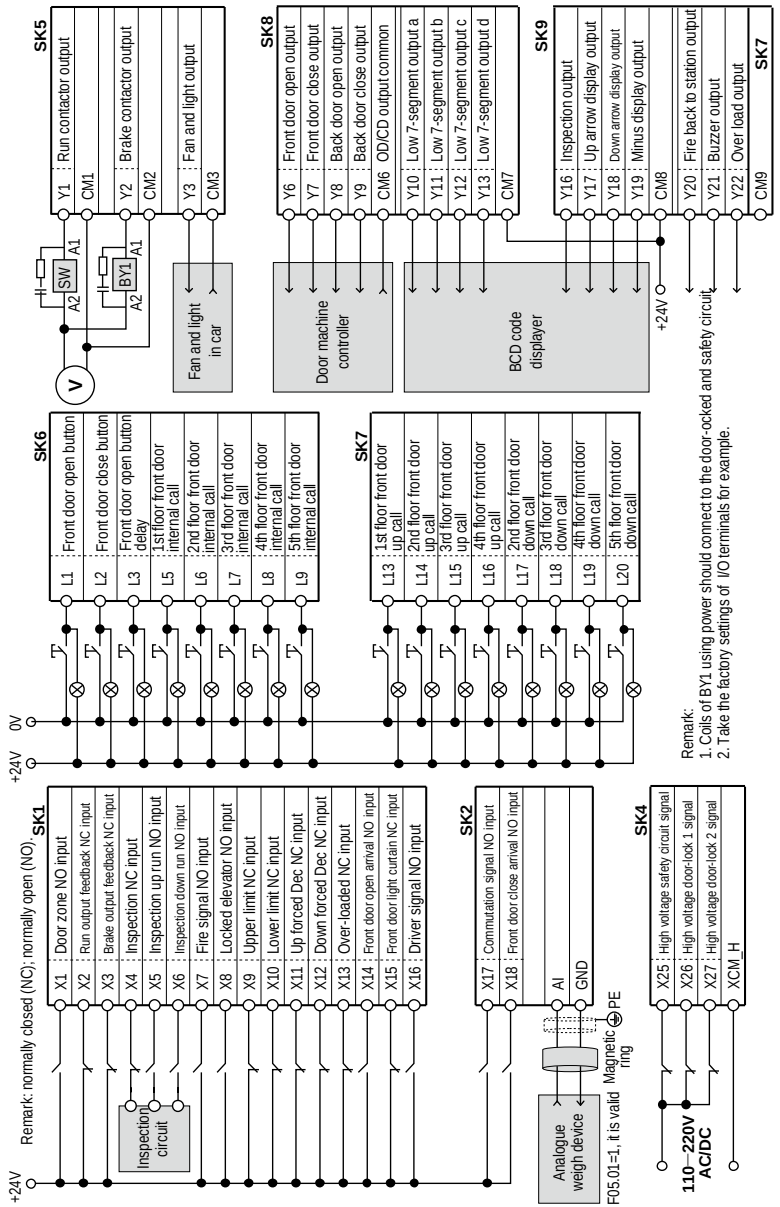

SK5
Y1 Run contactor output
CM1
Y2 Brake contactor output
CM2
Y3 Fan and light output
CM3
SK8
Y6 Front door open output
Y7 Front door close output
Y8 Back door open output
Y9 Back door close output
CM6 OD/CD output common
SK9
Y10 Low 7-segment output a
Y11 Low 7-segment output b
Y12 Low 7-segment output c
Y13 Low 7-segment output d
CM7
Y16 Inspection output
Y17 Up arrow display output
Y18 Down arrow display output
Y19 Minus display output
CM8
Y20 Fire back to station output
Y21 Buzzer output
Y22 Over load output
CM9
SK7
SW
BY1
A1
A2
V
Fan and light in car
Door machine controller
BCD code displayer
+24V
SK6
L1 Front door open button
L2 Front door close button
L3 Front door open button delay
L5 1st floor front door internal call
L6 2nd floor front door internal call
L7 3rd floor front door internal call
L8 4th floor front door internal call
L9 5th floor front door internal call
SK7
L13 1st floor front door up call
L14 2nd floor front door up call
L15 3rd floor front door up call
L16 4th floor front door up call
L17 2nd floor front door down call
L18 3rd floor front door down call
L19 4th floor front door down call
L20 5th floor front door down call
+24V
0V
Remark:
1. Coils of BY1 using power should connect to the door-ocked and safety circuit.
2. Take the factory settings of I/O terminals for example.
SK1
Remark: normally closed (NC); normally open (NO)
X1 Door zone NO input
X2 Run output feedback NC input
X3 Brake output feedback NC input
X4 Inspection NC input
X5 Inspection up run NO input
X6 Inspection down run NO input
X7 Fire signal NO input
X8 Locked elevator NO input
X9 Upper limit NC input
X10 Lower limit NC input
X11 Up forced Dec NC input
X12 Down forced Dec NC input
X13 Over-loaded NC input
X14 Front door open arrival NO input
X15 Front door light curtain NC input
X16 Driver signal NO input
Inspection circuit
SK2
X17 Commutation signal NO input
X18 Front door close arrival NO input
AI
GND
PE
Analogue weigh device
Magnetic ring
F05.01=1, it is valid
SK4
X25 High voltage safety circuit signal
X26 High voltage door-lock 1 signal
X27 High voltage door-lock 2 signal
XCM_H
110~220V AC/DC

Figure 9-4 Wiring diagram of full selective factory setting value

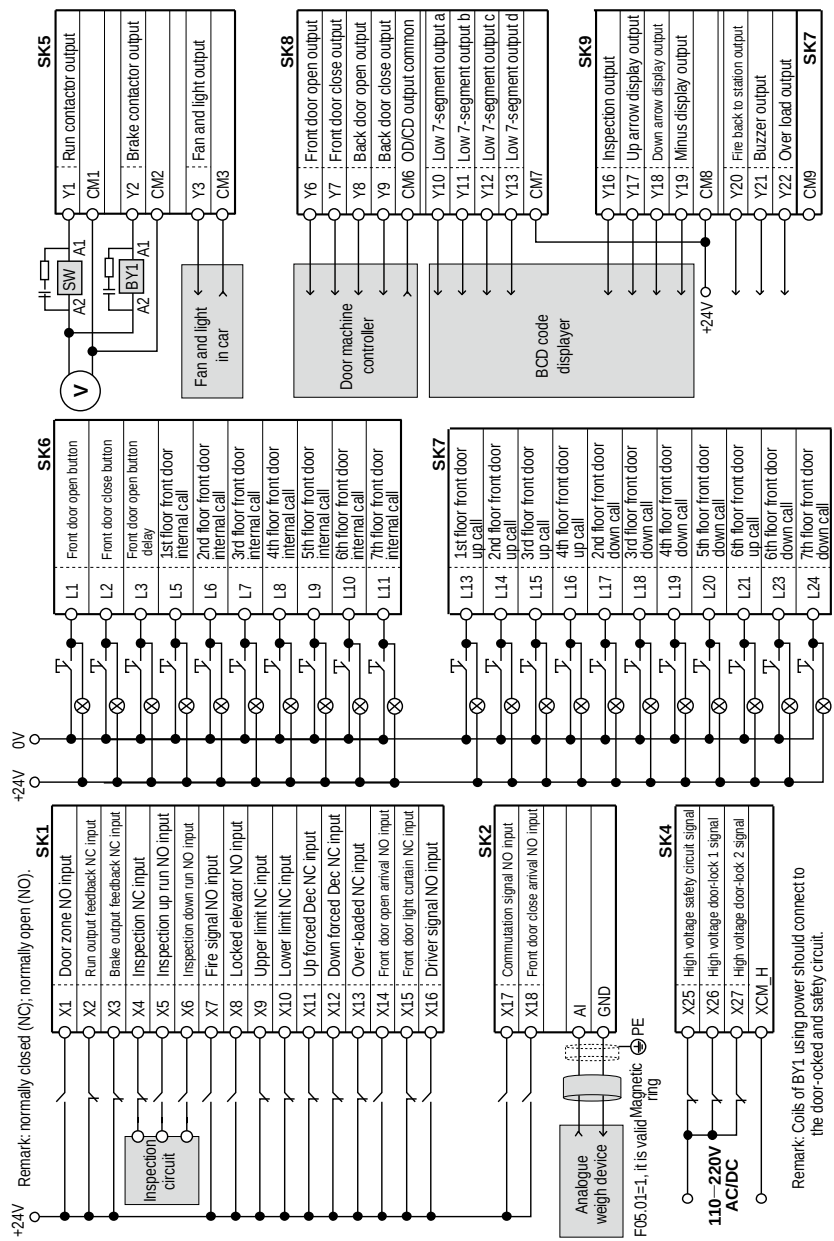

SK5
Y1 Run contactor output
CM1
Y2 Brake contactor output
CM2
Y3 Fan and light output
CM3
SK8
Y6 Front door open output
Y7 Front door close output
Y8 Back door open output
Y9 Back door close output
CM6 OD/CD output common
Y10 Low 7-segment output a
Y11 Low 7-segment output b
Y12 Low 7-segment output c
Y13 Low 7-segment output d
CM7
SK9
Y16 Inspection output
Y17 Up arrow display output
Y18 Down arrow display output
Y19 Minus display output
CM8
Y20 Fire back to station output
Y21 Buzzer output
Y22 Over load output
CM9
SK7
SW
BY1
A1
A2
V
Fan and light in car
Door machine controller
BCD code displayer
+24V
0V
SK6
L1 Front door open button
L2 Front door close button
L3 Front door open button delay
L5 1st floor front door internal call
L6 2nd floor front door internal call
L7 3rd floor front door internal call
L8 4th floor front door internal call
L9 5th floor front door internal call
L10 6th floor front door internal call
L11 7th floor front door internal call
SK7
L13 1st floor front door up call
L14 2nd floor front door up call
L15 3rd floor front door up call
L16 4th floor front door up call
L17 2nd floor front door down call
L18 3rd floor front door down call
L19 4th floor front door down call
L20 5th floor front door down call
L21 6th floor front door up call
L23 6th floor front door down call
L24 7th floor front door down call
Remark: normally closed (NC); normally open (NO).
SK1
X1 Door zone NO input
X2 Run output feedback NC input
X3 Brake output feedback NC input
X4 Inspection NC input
X5 Inspection up run NO input
X6 Inspection down run NO input
X7 Fire signal NO input
X8 Locked elevator NO input
X9 Upper limit NC input
X10 Lower limit NC input
X11 Up forced Dec NC input
X12 Down forced Dec NC input
X13 Over-loaded NC input
X14 Front door open arrival NO input
X15 Front door light curtain NC input
X16 Driver signal NO input
Inspection circuit
SK2
X17 Commutation signal NO input
X18 Front door close arrival NO input
AI
GND
PE
Analogue weigh device
F05.01=1, it is valid
Magnetic ring
SK4
X25 High voltage safety circuit signal
X26 High voltage door-lock 1 signal
X27 High voltage door-lock 2 signal
XCM_H
110—220V AC/DC
Remark: Coils of BY1 using power should connect to the door-ocked and safety circuit.

Figure 9-5 Wiring diagram of full selective largerst floor

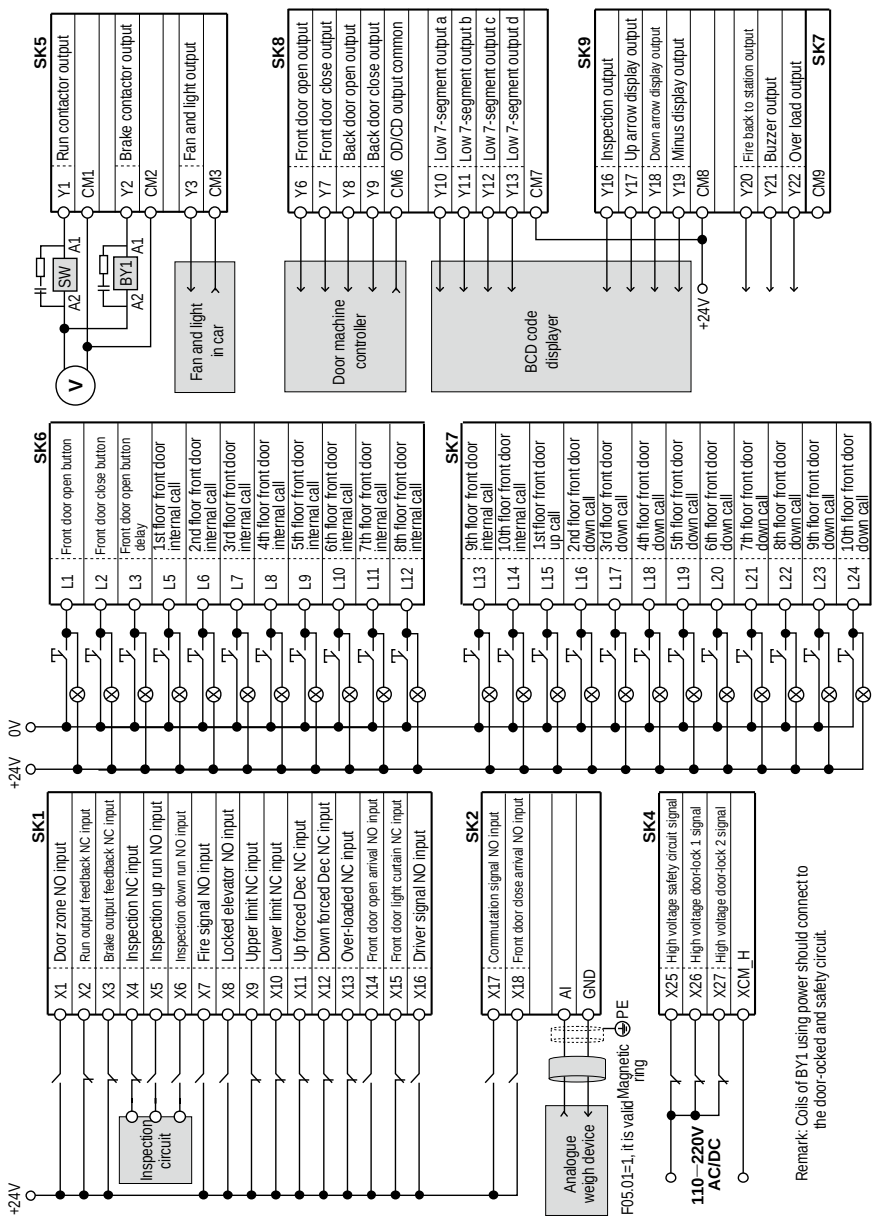

SK5
Y1 Run contactor output
CM1
Y2 Brake contactor output
CM2
Y3 Fan and light output
CM3
SW
BY1
A1
A2
V
Fan and light in car
SK8
Y6 Front door open output
Y7 Front door close output
Y8 Back door open output
Y9 Back door close output
CM6 OD/CD output common
Y10 Low 7-segment output a
Y11 Low 7-segment output b
Y12 Low 7-segment output c
Y13 Low 7-segment output d
CM7
Door machine controller
BCD code displayer
SK9
Y16 Inspection output
Y17 Up arrow display output
Y18 Down arrow display output
Y19 Minus display output
CM8
+24V
Y20 Fire back to station output
Y21 Buzzer output
Y22 Over load output
CM9
SK7
SK6
L1 Front door open button
L2 Front door close button
L3 Front door open button delay
L5 1st floor front door internal call
L6 2nd floor front door internal call
L7 3rd floor front door internal call
L8 4th floor front door internal call
L9 5th floor front door internal call
L10 6th floor front door internal call
L11 7th floor front door internal call
L12 8th floor front door internal call
L13 9th floor front door internal call
L14 10th floor front door internal call
L15 1st floor front door up call
L16 2nd floor front door down call
L17 3rd floor front door down call
L18 4th floor front door down call
L19 5th floor front door down call
L20 6th floor front door down call
L21 7th floor front door down call
L22 8th floor front door down call
L23 9th floor front door down call
L24 10th floor front door down call
0V
+24V
SK1
X1 Door zone NO input
X2 Run output feedback NC input
X3 Brake output feedback NC input
X4 Inspection NC input
X5 Inspection up run NO input
X6 Inspection down run NO input
X7 Fire signal NO input
X8 Locked elevator NO input
X9 Upper limit NC input
X10 Lower limit NC input
X11 Up forced Dec NC input
X12 Down forced Dec NC input
X13 Over-loaded NC input
X14 Front door open arrival NO input
X15 Front door light curtain NC input
X16 Driver signal NO input
Inspection circuit
SK2
X17 Commutation signal NO input
X18 Front door close arrival NO input
AI
GND
PE
Analogue weigh device
F05.01=1, it is valid
Magnetic ring
SK4
X25 High voltage safety circuit signal
X26 High voltage door-lock 1 signal
X27 High voltage door-lock 2 signal
XCM_H
110—220V AC/DC
Remark: Coils of BY1 using power should connect to the door-ocked and safety circuit.

Figure 9-6 Wiring diagram of down selective largerst floor

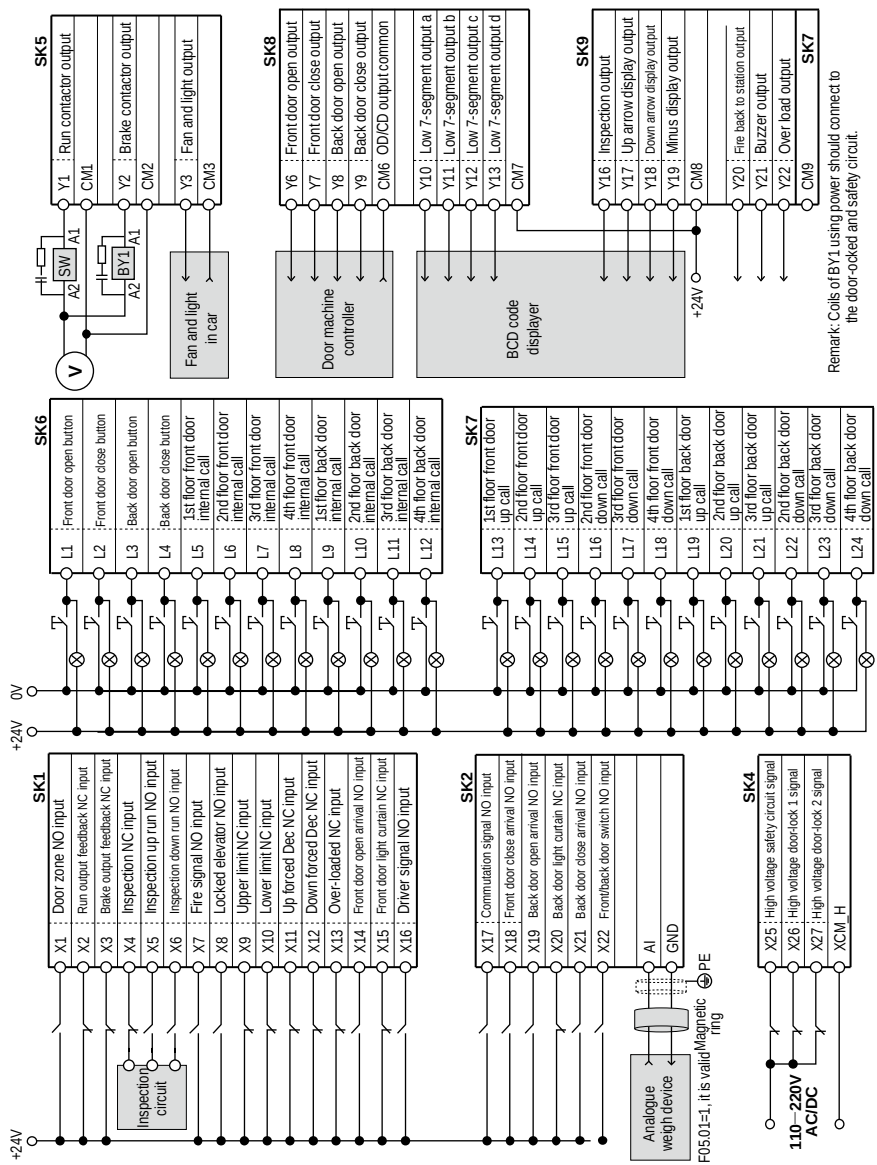

SK5
Y1 : Run contactor output
CM1
Y2 : Brake contactor output
CM2
Y3 : Fan and light output
CM3
SK8
Y6 : Front door open output
Y7 : Front door close output
Y8 : Back door open output
Y9 : Back door close output
CM6 OD/CD output common
Y10 : Low 7-segment output a
Y11 : Low 7-segment output b
Y12 : Low 7-segment output c
Y13 : Low 7-segment output d
CM7
SK9
Y16 : Inspection output
Y17 : Up arrow display output
Y18 : Down arrow display output
Y19 : Minus display output
CM8
Y20 : Fire back to station output
Y21 : Buzzer output
Y22 : Over load output
CM9
SK7
Remark: Coils of BY1 using power should connect to the door-locked and safety circuit.
SW
BY1
A1
A2
H
V
Fan and light in car
Door machine controller
BCD code displayer
+24V
SK6
L1 : Front door open button
L2 : Front door close button
L3 : Back door open button
L4 : Back door close button
L5 : 1st floor front door internal call
L6 : 2nd floor front door internal call
L7 : 3rd floor front door internal call
L8 : 4th floor front door internal call
L9 : 1st floor back door internal call
L10 : 2nd floor back door internal call
L11 : 3rd floor back door internal call
L12 : 4th floor back door internal call
SK7
L13 : 1st floor front door up call
L14 : 2nd floor front door up call
L15 : 3rd floor front door up call
L16 : 2nd floor front door down call
L17 : 3rd floor front door down call
L18 : 4th floor front door down call
L19 : 1st floor back door up call
L20 : 2nd floor back door up call
L21 : 3rd floor back door up call
L22 : 2nd floor back door down call
L23 : 3rd floor back door down call
L24 : 4th floor back door down call
+24V
0V
SK1
X1 : Door zone NO input
X2 : Run output feedback NC input
X3 : Brake output feedback NC input
X4 : Inspection NC input
X5 : Inspection up run NO input
X6 : Inspection down run NO input
X7 : Fire signal NO input
X8 : Locked elevator NO input
X9 : Upper limit NC input
X10 : Lower limit NC input
X11 : Up forced Dec NC input
X12 : Down forced Dec NC input
X13 : Over-loaded NC input
X14 : Front door open arrival NO input
X15 : Front door light curtain NC input
X16 : Driver signal NO input
SK2
X17 : Commutation signal NO input
X18 : Front door close arrival NO input
X19 : Back door open arrival NO input
X20 : Back door light curtain NC input
X21 : Back door close arrival NO input
X22 : Front/back door switch NO input
AI
GND
PE
SK4
X25 : High voltage safety circuit signal
X26 : High voltage door-lock 1 signal
X27 : High voltage door-lock 2 signal
XCM_H
Inspection circuit
Analogue weigh device
Magnetic ring
F05.01=1, it is valid
110~220V AC/DC

Figure 9-7 Wiring diagram of open-through door full selective

Chapter 10

Troubleshooting

Fault sort explanation

MONT71 has almost 60 pieces of protection functions.

MONT71 monitors all kinds of input signal, running condition etc. If some abnormal error happens, relevant fault protection functions will act and the controller will display the fault code.

Error information produced by MONT71 can be divided into 3 sorts according to their influence to the system. Different fault has different disposal mode, which is as shown in the next table.

Fault sort	Relevant disposal	Remark
Level 1 fault	• Display fault code • Error relay output action	Any kind of working condition will not be influenced
Level 2 fault	• Display fault code • Error relay output action • Stop at the nearest landing when in distance control, then stop running • Stop running at once in other work condition	After stop, the system will close off output at once, and close brake
Level 3 fault	• Display fault code • Error relay output action • The system blank off output at once, close brake and stop running	Forbid running

Fault reset method

After the fault is removed, you can do fault reset through the following ways:

1. Reset through the panel.
2. Make MONT71 completely power-down.
3. Some faults may auto-reset.

Fault code description

The fault's display code, cause, countermeasure and sort are seen in Table 10-1.

The panel displays five data: E+ Fault code

The panel can prompt fault code causes and countermeasures, and the detail operation is referred to section 7.1.3 (page 98).

The MCB's small panel displays three data: E+ Fault code

Table 10-1 Fault content and countermeasures

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
Lu	Lu	DC bus undervoltage	1: Power-on initial state, power-down end state 2: Input voltage is too low 3: Wiring does not regulate resulting in hardware undervoltage 4: Model is set incorrectly	1: Normal power up/down status, normal correctly 2: Check the input supply voltage 3: Check the wiring and regulate it 4: Set the model (Y00.01) correctly	3
E0001	E01	Controller output Acc overcurrent	1: Main circuit output is grounding 2: Main circuit output is short wiring 3: The motor has not done parameter auto-tuning 4: Load is too heavy 5: Encoder signal is wrong 6: Encoder signal interference is serious 7: Acceleration curve is too steep	1: Check the main circuit output side whether groud is short-circuited and output phase is short-circuited 2: Check whether the power wiring is damaged and the wiring is solid 3: Check wheter the motor internal exists a short circuit or shorted to ground 4: Outputside contactor is abnormal 5: Star-delta contactor causes MONT71 output short-circuited 6: Set the correct motor parameters (Group F07 / Group F10) 7: Restart motor parameter auto-tuning (Group F07 / Group F10) 8: Check whether the brake is abnormal 9: Check whether the mechanical is stuck 10: Check whether the elevator balance coefficient is correct 11: Check whether the encoder wiring is reliable 12: Set the correct encoder parameters (Group F11) 13: Encoder is installed reliably 14: Check whether the encoder alignment is independence wear tube, trace distance is too long and the shielded cable is single-end grounded 15: Check whether the acceleration /deceleration curve (Group F03) is too large	3
E0002	E02	Controller output Dec overcurrent	1: Main circuit output is grounding 2: Main circuit output is short wiring 3: The motor has not done parameter auto-tuning 4: Load is too heavy 5: Encoder signal is wrong 6: Encoder signal interference is serious 7: Deceleration curve is too steep		3
E0003	E03	Controller output constant speed overcurrent	1: Main circuit output is grounding 2: Main circuit output is short wiring 3: The motor has not done parameter auto-tuning 4: Load is too heavy 5: Encoder signal is wrong 6: Encoder signal interference is serious		3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0004	E04	DC bus voltage Acc overvoltage	1: Input voltage is too high 2: Acceleration curve is too steep 3: Brake resistance is too much 4: Braking unit is abnormal 5: Power feedback is abnormal	1: Adjust the input voltage, check whether the bus voltage (D01.06) is normal 2: Check the balance coefficient 3: Select the appropriate braking resistor, refer to section 5.6 Braking Resistor Selection (page 53) 4: Connect with braking unit or power regenerative unit, check the related equipment	3
E0005	E05	DC bus voltage Dec overvoltage	1: Input voltage is too high 2: Deceleration curve is too steep 3: Brake resistance is too much 4: Braking unit is abnormal 5: Power feedback is abnormal		3
E0006	E06	DC bus voltage constant speed overvoltage	1: Input voltage is too high 2: Brake resistance is too much 3: Braking unit is abnormal 4: Power feedback is abnormal		3
E0008	E08	Power module faulty	1: Short circuit between phases output or the ground 2: Motor wiring is too long 3: Work environment is overheating 4: Power module is damaged	1: Check the wiring and regulate it 2: Install the reactor or filter 3: Check whether the fan and the ventilation duct are normal 4: Please contact the supplier for repairing	3
E0009	E09	Heatsink overheated	1: Ambient temperature exceeds specifications 2: The controller external ventilation is adverse 3: Fan is faulty 4: Temperature detection circuit is faulty	1: Derated for using and increase power 2: Rectify controller external ventilation 3: Replace the fan 4: Seek for technical support	3
E0010	E10	Braking unit faulty	The braking circuit is faulty	Seek for technical support	3
E0011	E11	CPU fault	CPU is abnormal	1: Power-on observation after completely power down 2: Seek for technical support	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0012	E12	Parameter auto-tuning fault	1: Parameter auto-tuning timeout 2: Over current at parameter auto-tuning 3: Under the distance control (set F00.07 as 1) doing permanent magnet synchronous motor rotating auto-tuning (set F10.10 as 2)	1: Check the motor wiring 2: Input correct motor parameters (Group F07 / Group F10) 3: Do the permanent magnet synchronous motor rotating auto-tuning under the panel control (set F00.07 as 0)	3
E0013	E13	Soft start failed	1: Contactor fault 2: Control circuit fault	1: Replace the contactor 2: Seek for technical support	3
E0014	E14	Current detect faulty	1: Current detection circuit damage 2: Permanent magnet synchronous motor is out of control	1: Please contact the supplier for repairing 2: Check the brake signal	3
E0015	E15	Lack of input	For three-phase input controller, three-phase input power phase loss	1: Check the three-phase input power 2: Check the settings of parameter F17.00 and F17.01	3
E0016	E16	Lack of output	1: Controller three-phase output broken or loss of phase 2: Controller with serious imbalance in three-phase load	1: Check the wiring between controller and motor 2: Check the motor 3: Check the settings of parameter F17.02 and F17.03	3
E0017	E17	Controller overloaded	1: Brake circuit abnormal 2: Load is excessive 3: Encoder feedback signal abnormal 4: Motor parameter error 5: Check motor power line	1: Check the brake circuit 2: Reduce the load 3: Check the encoder feedback signal 4: Check the motor parameters and restart the parameter auto-tuning (Group F07 / Group F10) 5: Check the power line	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0018	E18	Excessive speed deviation	1: Brake contactor fault or run contactor fault 2: Encoder pulse number setting error 3: Excessive deviation of detection value and time setting unreasonable 4: Controller output torque is not enough 5: Speed-loop PI parameter setting is improper 6: Encoder signal error 7: Motor parameter error 8: F10.12 error	1: Check the brake contactor or the run contactor 2: Reasonably set encoder pulse parameter (F11.01) 3: Correctly set F04.11 (detected value) and F04.12 (detected time) 4: Select larger capacity controller 5: Correctly set speed-loop PI parameter (F08) 6: Check encoder wiring and installation 7: Check the motor parameter 8: Restart parameter auto-tuning	3
E0019	E19	Motor overloaded	1: Brake circuit abnormal 2: Motor overload protect factor set incorrectly 3: Load is excessive	1: Check the brake circuit 2: Correctly set motor overload protect factor (F17.04) 3: Reduce the load	2
E0020	E20	Motor overheated	1: Motor is overheated 2: Motor overheating input signal action 3: Motor parameter setting error	1: Reduce the load 2: Detect whether the overheating input terminal signal is correct 3: Correctly set motor parameter (Group F07 / Group F10)	2
E0021	E21	MCB EEPROM read/write faulty	MCB EEPROM circuit failure	Contact the supplier for repairing	3
E0022	E22	Panel EEPROM read/write faulty	Panel EEPROM circuit failure	1: Replace the panel 2: Contact the supplier for repairing 3: Panel manually reset to continue normal use (exclude parameter upload and download)	1

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0023	E23	Parameter setting faulty	1: In the non-panel mode, asynchronous motor parameter auto-tuning to set parameters auto-tuning 2: Synchronous motor selects ABZ encoder 3: Synchronous motor static auto-tuning, the operating mode is panel setting 4: Motor current is set to zero 5: Asynchronous motor no-load current setting value is larger than motor rated current 6: The creeping speed at distance control (F04.02) is larger than highest speed of running curve (F19.07－F19.11) 7: 0.000m/s＜F19.07－F19.11＜0.100m/s 8: Firefighting base station, locked-elevator base station and idle base station are set to non-service floor 9: Door service floors of firefighting base station, locked-elevator base station and idle base station are set to prohibit service	1: At asynchronous motor parameter auto-tuning, set F00.07 as 0 (panel control) 2: For the synchronous motor, F11.00 (encoder interface card selection) should be set as 2 (UVW encoder interface card) or 3 (SINCOS encoder interface card) 3: At synchronous motor static auto-tuning, set F00.07 as 1 (distance control) 4: Correctly set motor current (F07.02 / F10.03) 5: Correctly set asynchronous motor no-load current (F07.11) 6: Restart to set F04.02, F19.07－F19.11 7: Restart to set F19.07－F19.11 8: Restart to set F21.03, F22.01 and F22.02 9: Restart to setF21.03	3
E0024	E24	Input voltage detection failure	Input normal bus voltage, but the line voltage detection circuit is abnormal	1: Power-down treatment 2: Contact to factory for repairing	1
E0030	E30	Encoder reverse direction	1: The preset speed direction is inconsistent with the actual direction 2: Load is too large 3: Controller output torque is not enough 4: Brake circuit abnormal 5: Run contactor abnormal	1: At elevator commissioning, F11.02 (encoder direction) value is reverse; during normal running, do not modify F11.02 2: Reduce the load 3: Select larger capacity controller 4: Check the brake circuit 5: Check the run contactor	3
E0031	E31	Encoder disconnection	1: Encoder without input signal 2: Brake circuit abnormal	1: Check the encoder wiring and encoder installed reliably 2: Check the brake circuit	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0032	E32	Motor over speed	1: Encoder pulse number setting error 2: Controller output torque is not enough 3: Speed-loop PI parameter setting is improper 4: Encoder signal error 5: F10.12 error 6: Motor parameter error	1: Reasonably set encoder P/R (F11.01) 2: Select larger capacity controller 3: Correctly set speed-loop PI parameter (Group F08) 4: Check the encoder wiring and encoder installed reliably 5: Restart parameter auto-tuning 6: Check motor parameter	3
E0033	E33	Loss of Z signal of ABZ encoder	1: Wiring problem 2: Serious interference	Check the wiring	3
E0034	E34	UVW signal wrong of UVW encoder	UVW encoder sector confirmation is wrong	Whether the wiring of UVW is correct	3
E0035	E35	CD phase wrong of Sincos encoder	1: Encoder fault 2: Encoder disconnection	1: Check the encoder 2: Check the wirings of encoder C phase and D phase	3
E0036	E36	Shortest distance ultrahigh	1: Speed curve setting is inappropriate 2: Acceleration/deceleration setting is inappropriate	1: Set appropriate speed curve (F19.07－F19.11) 2: Set appropriate Acc/Dec curve parameters (F03.00－F03.05)	3
E0037	E37	Control board logic parameters	The main control board logic is abnormal	Please contact the supplier for changing the main control board	
E0038	E38	Up forced Dec switch disconnection	Elevator on the top floor, up forced deceleration switch is turned off	1: Check the up forced Dec switch 2: Restart shaft self-learning 3: Check the leveling switch signal	3
E0039	E39	Down forced Dec switch disconnection	Elevator on the first floor, down forced deceleration switch is turned off	1: Check the down forced Dec switch 2: Restart shaft self-learning 3: Check the leveling switch signal	3
E0040	E40	Elevator run timeout	Leveling signal without any change within F23.02 specified time	1: Elevator speed is too low, or floor height is too high 2: Leveling signal is abnormal 3: Steel wire skid	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0041	E41	Safety circuit disconnection	Safety circuit signal disconnection	1: Check the safety circuit switch, and view the status 2: Check the safety circuit power supply circuit 3: Check the safety circuit contactor signal 4: Check the safety circuit feedback contact signal characteristics (normally open or normally closed)	3
E0042	E42	Door locked disconnection during running	During elevator running process, the door locked signal is disconnected	1: Check whether the hall and the car door lock contact is normal 2: Check whether the door lock contactor action is normal 3: Check the door lock contactor feedback contact characteristics (normally open or normally closed) 4: Check the door lock power supply circuit 5: If there is MT70-AOB-A, check the corresponding signal	3
E0043	E43	Up limit signal disconnection during running	1: The signal of up limit is cut off when elevator is up running 2: Encoder signal interference makes elevator position error	1: Check that the up limit switch contact is normal or not 2: Check the up limit switch signal characteristics (normally open or normally closed) 3: Up limit switch installed low, normal run to the top will be action 4: Check encoder wiring and installation	3
E0044	E44	Down limit signal disconnection during running	1: The signal of down limit is cut off when elevator is down running 2: Encoder signal interference makes elevator position error	1: Check that the down limit switch contact is normal or not 2: Check the down limit switch signal characteristics (normally open or normally closed) 3: Down limit switch installed high, normal run to the bottom will be action 4: Check encoder wiring and installation	3
E0045	E45	Up/down forced Dec switch disconnection	Up/down forced Dec switches simultaneously disconnected	1: Check whether up/down forced Dec switches are normal 2: up/down forced Dec signal characteristics (normally open or normally closed) 3: F26.12 (inspection parameter setting) of Bit4 is set as 1	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0046	E46	Re-leveling abnormal	1: Elevator actual speed is larger than re-leveling speed +0.050m/s 2: Re-levelling position is not in the leveling area	1: Check the encoder signal 2: Check the leveling signal 3: Check the advanced open door block	3
E0047	E47	Lock-door contactor adhesion	Lock-door contactor feedback signal abnormal	1: Check lock-door contactor feedback signal characteristics (normally open or normally closed) 2: Check lock-door contactor action is normal or not 3: Check lock-door contactor feedback signal 4: Check the advanced open door block	3
E0048	E48	OD fault	OD continuous non-arrival times are over F22.09	1: Check the door machine system 2: Check the OD arrival signal is normal or not	3
E0049	E49	CD fault	CD continuous non-arrival times are over F22.09	1: Check the door machine system 2: Check the CD arrival signal is normal or not 3: Check the door lock circuit	3
E0050	E50	Shaft self-learning fault	At the beginning of the learning, if any of the following conditions is met, the fault will be alarmed: 1. The present floor is not the first floor 2. The self-learning direction is not up running 3. Down forced signal is invalid 4. Initial angle of the synchronous motor is 0 5. At two floors, the down leveling sensor isn't out off the leveling plate Run to the second floor, if meet the following condition, alarm fault: At the second floor self-learning, the learned adjustment distance is greater than 50cm	1: Check the up/down forced Dec switch signal 2: Actual floor is consistent with present floor (F19.01) or not 3: Synchronous motor is auto-tuning parameters or not 4: Check whether the motor actual running direction is correct 5: Check whether the leveling plate installation is correct 6: Check whether the leveling switch normally open/closed setting is right	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0050	E50	Shaft self-learning fault	Run to the top floor, if meet any of following conditions, alarm fault: 1. Up forced Dec 1 action is valid and in the door zone, and the present floor is inconsistent with the preset maximum floor 2. Elevator reaches the set floor and in the door zone, and the up forced Dec 1 is no action 3. The learned height of total floor is lower than 50cm 4. The learned up/down forced Dec 1 position is 0 5. If configured 2 and 3 level forced Dec switches, the learned up and down forced Dec position is 0 6. If you select multiple forced Dec signal, if does not meet the following conditions, it will alarm fault: Down forced position 1< Down forced position 2< Down forced position 3 Up forced position 1> Up forced position 2> Up forced position 3		3
E0053	E53	Lock-door short-circuit fault	OD arrival signal and lock door closure signal are valid at the same time	1: Check the door lock circuit action is normal or not 2: Check the door lock contactor feedback is normal or not 3: Check the door machine OD arrival signal 4: F26.12 (inspection parameter setting) of Bit3 is set as 1	3
E0054	E54	Synchronous motor star-delta contactor feedback abnormal	Synchronous motor star-delta contactor feedback abnormal	1: Check whether the contactor feedback contact is consistent with MCB parameter setting (normally open or normally closed) 2: Check whether the indicator on MCB output side is consistent with contactor action	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0054	E54	Synchronous motor star-delta contactor feedback abnormal	Synchronous motor star-delta contactor feedback abnormal	3: After the contactor acts, check whether the corresponding feedback contact and MCB corresponding feedback input point acts 4: Check whether the output characteristics of contactor is consistent with that of MCB 5: Check the contactor coil circuit	3
E0055	E55	Changed floor park fault	When elevator runs automatically, the floor has not received OD arrival signal	1: Check the door machine OD arrival signal 2: Check the door mechanical system	1
E0056	E56	Run contactor feedback abnormal	Run contactor feedback abnormal	1: Check whether the contactor feedback contact is consistent with MCB parameter setting (normally open or normally closed) 2: Check whether the indicator on MCB output side is consistent with contactor action 3: After the contactor acts, check whether the corresponding feedback contact and MCB corresponding feedback input point acts 4: Check whether the output characteristics of contactor is consistent with that of MCB 5: Check the contactor coil circuit 6: F26.17 is set as 1, the fault will restore	3
E0057	E57	Brake contactor feedback abnormal	1: Brake contactor feedback signal abnormal 2: Brake mechanical switch feedback abnormal 3: Brake forced feedback abnormal	1: Check whether the contactor feedback contact is consistent with MCB parameter setting (normally open or normally closed) 2: Check whether the indicator on MCB output side is consistent with contactor action 3: After the contactor acts, check whether the corresponding feedback contact and MCB corresponding feedback input point acts 4: Check whether the output characteristics of contactor is consistent with that of MCB	3

Panel display	Small panel display	Fault name	Fault cause	Countermeasure	Sort
E0057	E57	Brake contactor feedback abnormal	1: Brake contactor feedback signal abnormal 2: Brake mechanical switch feedback abnormal 3: Brake forced feedback abnormal	5: Check the contactor coil circuit 6: Check the brake mechanical switch feedback signal 7: Check the brake forced feedback signal 8: Check the brake forced contactor coil 9: F26.17 is set as 1, the fault will restore	3
E0058	E58	Leveling signal abnormal	Leveling/door zone signal is adhesion or cut off	1: Check whether the leveling and the door zone can work normally 2: Check the vertical and depth of leveling plate installation 3: Check the MCB input point	3
E0059	E59	Receive OD and CD arrival signals at the same time	Receive door machine OD and CD arrival signals at the same time	1: Check the door machine controller 2: Check OD/CD arrival signal characteristics (normally open or normally closed) 3: At inspection mode, F26.12 (inspection parameter setting) of Bit5 is set as 1, which can shield the fault	3
E0060	E60	Forced Dec distance is too short	Forced Dec distance is too short	1: Check up/down forced Dec 1 switch installation 2: Check the forced Dec speed (F03.12)	3
E0062	E62	Inspection run overcurrent	Inspection running current is 110% over motor rated current	1: Reduce the load 2: F26.12 of Bit1 is set as zero 3: Permanent magnet synchronous motor identified the encoder angle does not match with the actual, restart parameter auto-tuning 4: Encoder abnormal 5: Brake circuit abnormal	3
E0063	E63	Advanced open door abnormal	1: Speed is larger than advanced open speed + 0.050m/s 2: Advanced open operation is not in the leveling	1: Check the encoder signal 2: Check the leveling signal 3: Check the advanced open block (MT70-AOB-A)	3

The following faults can automatically reset:

1. E0009 heatsink overheated fault: After the heatsink temperature drops to 50℃, the fault will reset automatically.

2. E0020 motor overheated fault: After motor overheated switch recovers, the fault will reset automatically.

3. E0041 safety circuit disconnection fault: After the safety circuit is connected, the fault will reset automatically.

4. E0042 door locked disconnection fault: After locked-door is connected and auto reset, or door zone signal is valid, 1s later, the fault will reset automatically.

5. E0055 changed floor park fault: The fault only recorded once at power-on.

6. E0059 OD and CD arrival signals at the same time fault: The fault only recorded once at power-on, and if OD/CD arrival signals are not valid at the same time, the fault will reset automatically.

7. E0048, E0049 and E0055 faults can be reset by inspection button.

Chapter 11

Maintenance

Many factors such as ambient temperature, humidity, dust, oscillation, internal component aging, wear and tear will give rise to the occurrence of MONT71 potential faults. Therefore, it is necessary to conduct daily maintenance to MONT71.

- If MONT71 has been transported for a long distance, please check whether the components are complete and the screws are well tightened.
- Please periodically clean the dust inside MONT71 and check whether the screws are loose.

Danger

- Only a trained and qualified professional person can maintain MONT71.
- Maintenance personnel should take off all metal jewellery before carrying out maintenance or internal measurements. Suitable clothes and tools must be used.
- High voltage exists when MONT71 is powered up or running.
- Checking and maintaining can only be done after MONT71 AC power is cut off and wait for at least 10 minutes. The cover maintenance can only be done after ensured that the charge indicator inside MONT71 are off and the voltage between power terminals (+) and (-) is below 36V.

Warning

- For MONT71 stored for more than 2 years, please use voltage regulator to increase the input voltage gradually.
- Do not leave metal parts like screws or pads inside MONT71
- Do not make any change to the MONT71 inside without instruction from the supplier.
- There are IC components inside the MONT71, which are sensitive to static electricity. Directly touch the components on the PCB board is forbidden.

11.1 Daily Maintenance

MONT71 must be operated in the specified environment (refer to section 5.2, page 48). Besides, some unexpected accidents may occur during operation, and you should check the items in accordance with Table 11-1 to do well daily maintenance.

Maintain good operation condition and record the operation data to solve problems immediately.

Table 11-1 Daily checking items

Items	Content	Criteria
Operating environment	Temperature and humidity	-10－+40℃, derating at 40－50℃
	Dust and water dripping	No water dripping
	Gas	No strange smell
MONT71	Oscillation and heating	Stable oscillation and proper temperature
	Noise	No abnormal sound
Motor	Heating	No overheating
	Noise	No abnormal sound
Operating state parameters	Output current	Within rated range
	Output voltage	Within rated range

11.2 Periodical Maintenance

Customer should check MONT71 in short time or every 3 to 6 months according to the actual environment so as to avoid hidden problems and make sure MONT71 runs well for a long time.

General Check:

- Check whether the screws of control terminals are loose. If so, tighten them with a screw driver.
- Check whether the main circuit terminals are properly connected; whether the mains cables are over heated.
- Check whether the power cables and control cables are damaged, check especially for any wear on the cable tube.
- Check whether the insulating tapes around the cable lugs are stripped, and for signs of overheating near terminations.
- Clean the dust on PCBs and air ducts with a vacuum cleaner.

Note:

1. Dielectric strength test of MONT71 has already been conducted in the factory. Do not do the test again. Otherwise, MONT71 might be damaged.
2. If insulation test to the motor is necessary, it should be done after the motor's input terminals U/V/W have been detached from MONT71. Otherwise, MONT71 will be damaged.
3. For MONT71 that have been stored for a long time, they must be powered up every 2 years. When supplying AC power to MONT71, use a voltage regulator to gradually raise the input voltage to rated input voltage at least 5 hours.

11.3 Replacing Damaged Parts

The components that are easily damaged are: cooling fan and electrolytic capacitors of filters. Their lifetime depends largely on their application environment and preservation. The users can decide the time when the components should be replaced according to their service time.

Cooling fan

Life: 60,000 hours.

Possible cause of damages: Wear of the bearing, aging of the fan vanes.

Criteria: After MONT71 is switched off, check if the abnormal conditions such as crack existing on fan vanes and other parts. When MONT71 is switched on, check if MONT71 running is normal and check if there is any abnormal oscillation.

Electrolytic capacitors

Life: 50,000 hours

Possible cause of damages: High ambient temperature, aging of electrolyte and large pulse current induced by rapid changing loads.

Criteria: Check if frequent overcurrent or overvoltage failures occur during MONT71 start-up with load. Check if there is any leakage of liquids. Check if the safety valve protrudes. Measure the static capacitance and insulation resistance.

11.4 Unwanted MONT71

When disposing the controller, please pay attention to the following factors:

The capacitors of MONT71 may explode if they are burnt.

Poisonous gas may be generated when the plastic parts like front covers are burnt. Please dispose the unwanted MONT71 as industrial waste.

Warranty Card

Clinet information	Unit:	
	Address of unit:	
	P.C.:	Contact person:
	Tel.:	Fax:
Product info.	Barcode on the product body (paste here):	
	Power:	Model:
	Contrat number:	Purchasing date:
Service unit info.	Service unit:	
	Contact person:	Tel.:
	Maintenance staff:	Tel.:
	Maintenance date:	

User's quality evaluation for the service:

☐ Better ☐ Good ☐ Common ☐ Poor

Other opinions:

User signature: Date:

Interview record of Customer Service Center:

☐ Interviewed by telephone ☐ Interviewed by letters

Others:

Technical service engineer signature: Date:

Warranty Agreement

1. The warranty period of the product is 18 months (refer to the barcode on the product body). During the warranty period, if the product fails or it is damaged under condition of normal use by following the user's manual, our company will be responsible for free maintenance.
2. The starting time of the warranty period is manufacturing date (see the barcode on the product body), but we could negotiate settlement under special condition.
3. Within warranty period, maintenance will be charged for damages caused by the following reasons:
   A. The damage is caused by improper use or repair/modification without prior permission;
   B. The damage is caused by abnormal voltage, fire, flood, other disasters and second disasters;
   C. The damage is caused by dropped or transportation after purchase;
   D. The damage is caused by the operation not following this user manual;
   E. The damage or failure is caused by the trouble out of the equipment (e.g. external device).
4. If there is any failure or damage to the product, please correctly fill out the Product Warranty Card in detail.
5. The maintenance fees are charged according to the newly adjusted Maintenance Price List by our company.
6. In general, the warranty card will not be reissued. Please keep the card and present it to the maintenance personnel when asking for maintenance.
7. If there is any problem during the service, please contact the agent of our company or our company directly.